

UNITED STATES DISTRICT COURT  
DISTRICT OF MASSACHUSETTS

NEW ENGLAND CARPENTERS HEALTH  
BENEFITS FUND; PIRELLI ARMSTRONG  
RETIREE MEDICAL BENEFITS TRUST;  
TEAMSTERS HEALTH & WELFARE FUND  
OF PHILADELPHIA AND VICINITY;  
PHILADELPHIA FEDERATION OF  
TEACHERS HEALTH AND WELFARE  
FUND; DISTRICT COUNCIL 37; AFSCME -  
HEALTH & SECURITY PLAN; JUNE  
SWAN; MAUREEN COWIE and BERNARD  
GORTER,

Plaintiffs,

v.

FIRST DATABANK, INC., a Missouri  
corporation; and McKESSON  
CORPORATION, a Delaware corporation,

Defendants.

C.A. No. 1:05-CV-11148-PBS

**REPORT OF RAYMOND S. HARTMAN  
REGARDING THE RELIABILITY OF IMS DATA  
FOR CALCULATING AGGREGATE CLASS DAMAGES**

## I. QUALIFICATIONS

1. My name is Raymond S. Hartman. I have submitted Declarations to this Court in this matter, *New England Carpenters Health Benefits Fund, et al. v. First DataBank, Inc., and McKesson Corporation*, in July and December 2006, and in March, September and October 2007.

## II. ANALYSIS OF THE RELIABILITY OF IMS DATA

### A. Overview

2. I have been asked by Counsel for the Plaintiffs to respond to questions raised by the Court in the *Motion Hearing* of November 13, 2007.<sup>1</sup> Specifically, the Court inquired as to the reliability of the IMS National Prescription Audit (NPA) survey data as the basis for calculation of aggregate damages to the relevant Classes in this matter and its ability to serve as a reasonably accurate proxy for TPP payments.

3. IMS Health is one of the most, if not the most, frequently used sources of data summarizing a variety of business transactions, strategic behavior and corporate activity of pharmaceutical manufacturers. In my previous declarations, I have cited a substantial number of peer-reviewed journal articles that have relied upon IMS data generally and IMS NPA data specifically.<sup>2</sup> Indeed, just two days after the *Motion Hearing*, my colleague and co-author, Dr. Richard Frank of the Harvard School of Public Health, discussed regulation and market penetration of generic drugs in the *New England Journal of Medicine*. His analysis uses the same data that I have used in my aggregate damage calculations, that is, the IMS NPA data.<sup>3</sup> The IMS Health NPA data have been used, by both plaintiff and defense experts alike, in a great deal of antitrust and RICO litigation in pharmaceutical markets where Classes have been certified, damages calculated and settlements adjudicated for sub-classes of end-payors including TPPs. I have always used IMS NPA data in analyses for class certification, damage calculation and damage allocation in such litigation;<sup>4</sup> the defense experts adverse to me, including a current

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<sup>1</sup> Motion Hearing, *New England Carpenters Health Benefits Fund, et al. v. First DataBank, Inc., and McKesson Corporation*, United States District Court District of Massachusetts, C.A. No. 1:05-CV-11148-PBS, November 13, 2007 (hereafter *Motion Hearing*).

<sup>2</sup> See Attachment B, Hartman October 2007 Declaration (Report of Raymond S. Hartman Regarding Aggregate Damages, *New England Carpenters Health Benefits Fund, et al. v. First DataBank, Inc., and McKesson Corporation*, United States District Court District of Massachusetts, C.A. No. 1:05-CV-11148-PBS, October 29, 2007).

<sup>3</sup> Richard G. Frank, "The Ongoing Regulation of Generic Drugs," *The New England Journal of Medicine*, November 15, 2007, 357(20), pp. 1993-1996.

<sup>4</sup> See my annotated CV in Attachment A.

partner of Dr. Willig,<sup>5</sup> have used IMS NPA data. In none of these cases has the IMS data been impeached. In none of these cases have the IMS data been challenged as they have been here. In all of these cases, the IMS data have been accepted as a reasonable proxy for the reimbursement rates paid by all payors: TPPs, cash payors and Medicaid.

The IMS data are and have been considered the gold standard for reasonable measurement of reimbursement by end payors, including TPPs. There is no evidence that the reliability of the IMS data has changed with the Mark-Up Inflation Scheme. McKesson has put forward no evidence of such a change. McKesson counsel have merely raised a specious question, without affirmative support, to plant a doubt in this Court's mind. If we are to believe Ms. Schechter and Dr. Willig, all of these case decisions based upon the arguments of all of these defense and plaintiff experts should be reversed because of the Courts' reliance upon unreliable data.

4. The IMS NPA database summarizes unit sales and dollar sales (by month, by drug and by drug dosage) for transactions reimbursed at retail by three distinct groups of payors: TPPs, uninsured cash payors, and Medicaid.<sup>6</sup> None of these payor groups are

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<sup>5</sup> In the matter, *In re Terazosin Hydrochloride Antitrust Litigation*, Case No. 99-MDL-1317 Seitz/Garber, United States District Court for the Southern District of Florida, in which class was certified and damages calculated for a sub-class of TPPs and a sub-class of consumers, I used survey data from a representative sample of TPPs and retail pharmacies to gather claims data and to calculate damages. The expert adverse to me, Dr. Daniel Rubinfeld, who is a current partner of Dr. Willig, made use of IMS data.

<sup>6</sup> The National Prescription Audit (NPA) is one of the core market research services provided by IMS. Weekly and monthly versions of the service are available, providing new and total prescriptions sold at the national and regional level by chain and independent pharmacies, mass-merchandisers and food stores with pharmacies, mail order pharmacies and long-term care. (See [www.imshealth.com](http://www.imshealth.com).) In 2007, IMS surveyed 35,987 retail stores (independent, chain, and food store pharmacies) to compose its sample from a universe of 55,369 retail stores. Prescriptions dispensed at retail stores account for 56% of all prescriptions dispensed in the U.S. (See "A Description of the National Prescription Audit" provided by IMS). The data used in the NPA comes from IMS Health's Xponent service, which captures about 70% of all prescriptions sold in the U.S. (See Nabarun Dasgupta, E. Douglas Kramer, Mary-Ann Zalman, Salvatore Carino Jr., Meredith Y. Smith, J. David Haddox, and Curtis Wright IV, "Association between non-medical and prescriptive usage of opioids," *Drug and Alcohol Dependence* Vol. 82 (2), pp. 135-142, 2006, at p. 136.) Using its proprietary projection algorithm, which is "based on a stratified and geographically balanced sample," IMS is able to calculate the total number of prescriptions sold in the U.S. IMS Health's NPA is recognized as "the industry standard for prescription sales data...[it is] one of the best publicly available estimates of the amount of drug in prescriptive use in a given year" (Dasgupta et al., at p. 136.).

The NPA data categorizes reimbursement at retail for TPPs, cash payors and Medicaid. Its standard product offering is the aggregation of all prescriptions (in scripts, pills and dollars of retail sales) over all payors. The retail survey activity generating the NPA data also generates the Retail Method of Payment Report, which is the basis for the classification of retail transactions. According to IMS, Information Services Manual 2002, Chapter 30: Retail Method-of-Payment Report, p. 30-2:

"Retail Method-of-Payment (RMOP) Report is designed to provide insight into the size and characteristics of the managed care industry. The product reports dispensed prescription data on all cash, third party, and Medicaid transactions through retail pharmacies. ... The universe for RMOP includes all retail pharmacies (approximately 51,000) in the entire United States. ... The RMOP Report is a benchmark tool that you can use to determine the impact of managed care on your business. You can answer questions such as:

- How much of the prescription market unit and dollar volume is under third-party payer influence?
- What do you project for next year's Medicaid and third-party rebates for Product X?

PBMs. Some payors included in the TPP aggregate do not use a PBM; many do. ***While asserting that the IMS data represents PBM rather than TPP reimbursements, McKesson makes no affirmative showing of the percentage of total reimbursements accounted for by PBMs for the TPP payor group.*** IMS aggregates these data over all three groups; their basic NPA survey product is this aggregation.

5. Using these data, I calculated the average monthly reimbursement rates per prescription (by drug and dosage) as retail dollar sales/retail units. I calculated the average monthly reimbursement over all payors. I compared that actual average reimbursement rate to the average reimbursement rate that would have been paid at retail *but for* the 5% Inflation Scheme. The resulting difference is my measure of average damages per prescription. Multiplying that average damage measure times the total number of prescriptions filled at retail, by drug and dosage, yields my measure of aggregate damages.

6. I then disaggregated the aggregate measure of damages to the damages incurred by the groups of TPPs (in many cases through their agent PBMs); those consumers paying coinsurance on reimbursements paid by their TPPs; and, should the Court allow the Class, those uninsured cash-paying consumers paying U&C. In the process, I adjusted the aggregate TPP damage calculations for aggregate changes in the rebates they received. I also subtracted out the aggregate damages attributable to reimbursement on behalf of Medicaid and all other governmental beneficiaries. In performing this disaggregation, I used data published by Novartis.<sup>7</sup> However, I note that IMS can disaggregate its NPA retail payments data by these same three groups: TPPs, Medicaid and uninsured cash payors.<sup>8</sup> I would recommend that I use this data should I be asked to refine my damage calculations and/or undertake a damages allocation analysis. I discuss this refinement in ¶ 22 below.

7. As I have described in detail in this matter and in the AWP MDL matter, my use of the average measure of overall reimbursement per prescription times total prescriptions is a standard methodology for the calculation of ***aggregate economic damages to all payors***. My disaggregation into the relevant sub-classes uses standard economic methodology.

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- What are the components and dynamics of the managed care prescription market segment?
  - How do characteristics of public and private managed care prescriptions differ from ‘cash’ prescriptions?
  - How can you project Medicaid and third-party acceptance of a new product?”

<sup>7</sup> Novartis, Pharmacy Benefit Report: Facts & Figures, 2004 edition, Figure 1: Retail Market Share by Payer Type: 2003, p. 23.

<sup>8</sup> At the time that I submitted my damages declaration, I was unaware that IMS could provide these data for more than most recent 24 months. Upon further discussion with IMS, they have agreed to undertake a special data run that would provide the NPA data by these three payor groups beginning in 2001. This additional run, which is quite costly, will provide retail level prices disaggregated by cash payors, TPPs and Medicaid.

## B. More Specific Analysis of TPP Claims Data

8. In response to questions raised by Defendant's counsel and expert, the Court has asked for further documentation regarding the reliability of the IMS data as the basis for calculating aggregate damages to TPPs. McKesson argues that some portion, again which they do not quantify, of the retail survey data summarizes PBM payments on behalf of their client TPPs rather than the TPP reimbursement itself and is not representative of TPP reimbursement.<sup>9</sup> They imply that the IMS data cannot be used for a showing of causation and the calculation of damages for TPPs on a Class-wide basis.

9. As I state in ¶3 above, this inference is contradicted by the case law. In more than ten years of analysis in support of antitrust litigation (most specifically Hatch-Waxman-related matters), RICO litigation and/or academic research in pharmaceutical and health care markets,<sup>10</sup> I have reviewed and statistically analyzed claims data for many large and small TPPs accounting for 25%-50% of insured lives nationally; claims data for large and small independent and chain network pharmacies accounting for 10-20% of total prescriptions; for employer-sponsored ERISA insurance plans; and for one of the largest three PBMs in the United States. I have reviewed, compared and statistically analyzed the retail sales survey data for the two largest providers of market data prescription drugs – IMS and Verispan. I have reviewed and analyzed Medicare and Medicaid claims data, for pharmaceutical and health care service claims. In my work in the brand-name prescription drug litigation, I reviewed and statistically analyzed the transactions data for all the major drug wholesalers in the country. I have reviewed and statistically analyzed the transactions data for several small regional wholesalers. In all of these analyses over this period of time, I have never found a case where the IMS data was argued to not reflect or be a reasonable proxy for what TPPs paid at retail.

10. Dr. Willig and McKesson's counsel make such an assertion. Indeed, despite the facts that IMS lists its payor groups to include TPPs and that IMS provides reimbursement data grouped by payors aggregated as private TPPs, Medicaid and uninsured cash payors, at p. 26 of the *Motion Hearing*, Ms. Schechter asserts that "IMS is telling us that IMS data doesn't reflect TPP payments."

11. ***Just where does IMS tell us this?*** The IMS materials I have reviewed do not "tell us that IMS data doesn't reflect TPP payments." More specifically,

- a) The IMS data reference manual describes how retail transaction data are grouped by payor type – TPPs, cash payors and Medicaid; see my footnote 6. Nothing is said therein about PBMs.
- b) In his October 15, 2007 Declaration, Darrell Philpot of IMS Health states (at ¶ 5), "NPA includes a field for estimates of the prices at which pharmacies are reimbursed for dispensing drugs to consumers. ... The pharmacy panel is asked to report the amounts they directly receive from consumers and public and private

<sup>9</sup> This objection does not extend to uninsured cash paying consumers. The IMS summarizes the exact amount paid by uninsured cash payors as U&C, which is related to AWP and on average greater than AWP. See Hartman September 2007 Declaration, ¶¶ 10-11.

<sup>10</sup> Again, see Hartman CV, Attachment A.

payors for dispensing prescription drugs. For transactions where the pharmacy receives reimbursement from a PBM, the pharmacy reports what the pharmacy received from the PBM, and IMS records this amount as a payment from a private payor. IMS data does not capture any information on the amounts paid by a third party payor to a PBM, and these payments are not reflected in data provided through the NPA or any other service offered by IMS.”

- ***This testimony is telling for what it does not say.***
  - First, if a payment ***is made at retail by a TPP itself***, Mr. Philpot does not assert that such reimbursement data are excluded from the IMS TPP reimbursements at retail.
  - Second, if a payment is made by a PBM on behalf of a TPP, ***Mr. Philpot has no idea whether or not that payment is a good proxy for TPP payments***, since “IMS data does not capture any information on the amount paid by a third party payor to a PBM.”
  - ***Mr. Philpot’s testimony tells us nothing about how well the IMS data captures and proxies TPP reimbursement data.***
- c) Mr. Philpot attempts to impeach the use of IMS data in any litigation analyses, hence in all of the litigation that has occurred and relied upon IMS data in the past. He states at his ¶ 7, “IMS does not support the use of its data in litigation. Using IMS’s syndicated information services in litigation is problematic because IMS information applies sampling, editing, bridging, projection and production techniques that are susceptible to error and variance that cannot be easily quantified, while the data overall and in the aggregate are very valuable and useful when used for its intended purpose (e.g., marketing, research).”
- ***This testimony simply is not credible.***
  - All survey data are subject to “sampling, editing, bridging, projection and production techniques.” All survey data “are susceptible to error and variance.” Yet survey data are used regularly and extensively in strategic planning, market projections and litigation analysis.
  - When used in litigation, the IMS data are used in precisely the same fashion that large billion dollar drug companies use the IMS data to project market penetration, pricing strategies and market responses by payors (TPPs, cash payors and Medicaid) and managed care. The IMS Reference Manual cited in footnote 6 makes it clear that IMS promotes the data for such uses.
  - If the IMS data are “very valuable and useful when used for its intended purpose (e.g., marketing, research),” they are very valuable for answering the same questions and making the same types of projections and forecasts in the but-for worlds of litigation.

12. In order to examine how well the IMS data did reflect TPP data, I used Dr. Willig’s own data analysis for GE and Cigna and presented my analytic results to the



Court in my October 2007 Declaration and Tutorial.<sup>11</sup> For Dr. Willig's bellwether drugs, I demonstrated that the economic conclusions drawn from the claims data are consistent with those derived from the IMS data. Specifically, the average inflation in reimbursement rates found in the IMS data was mirrored by inflation for these two specific TPPs. In some cases for some drugs in some periods, the Mark-Up Inflation for GE and Cigna was above or below the IMS average. This is precisely what an economist would expect from an average and two sample points (TPPs) for that average. For the largest TPP of the two, Cigna,<sup>12</sup> the Mark-Up Inflation for some drugs was greater than the average Mark-Up Inflation found in the IMS data for all payors. For some Cigna drugs, the Mark-Up Inflation increased over time; for some it was pushed back. *Since Cigna is a large highly sophisticated TPP insuring many more lives than GE; since the Mark-Up inflation revealed by the Cigna claims data is greater than the IMS data for some drugs (Plavix); since the Cigna data shows similar or even less "push-back" for some drugs (Plavix, Prevacid, Wellbutrin)*, I find McKesson's argument that use of IMS data overstates damages contradicted by their own analysis.

13. In Attachment B, I take this analysis one step further. For Dr. Willig's four bellwether drugs (Lipitor 10 and 20 mg; Plavix 75 mg; Prevacid 30 mg; and Wellbutrin 150 mg) and for several other large selling drugs subject to the Mark-Up Inflation Scheme (Celebrex 200 mg; Neurontin 300 mg; and Prilosec 20 mg), I compare the average monthly reimbursements measured using IMS data for all payors including GE and Cigna with the average monthly amounts found in the Cigna and GE claims data. I present data for a period for which I have consistent IMS NPA data, GE claims data and Cigna claims data (July 2001-April 2004).

14. Since the IMS NPA data include all reimbursements by TPPs (some portion of which is paid by PBMs), cash payors and Medicaid, I expect that the average reimbursement rate in the IMS will be greater than the average TPP claims amount, since TPPs generally will be better able to negotiate discounts than cash payors. This is to be expected with an average measure over all payors. However, the important question is whether the IMS data provides a proxy for all reimbursement by all payors, including TPPs. More specifically, if the measures of drug reimbursements in the IMS data indicate increases due to the Mark-Up Inflation, does that mean that the amounts paid by TPPs (and cash payors and Medicaid) increased proportionally?

15. To answer this question, let me examine how Cigna claims data compare with the IMS data on a monthly basis for the selected drugs. The comparison is provided in Attachment B.1; it demonstrates the following.

- a) As expected, for each drug the average monthly amount reimbursed by Cigna and booked in their claims data was less than the amount reflected by the IMS data. However, *this amount was nearly constant over time for each drug and quite similar across drugs*. Specifically, the average amount paid by Cigna in its claims *for all* drugs was 88%-92% of the average IMS reimbursement amount.

<sup>11</sup> See ¶¶ 16-26 & Attachment C of my October 2007 Declaration; see also Slides 14 and 15 of my October 2007 Tutorial.

<sup>12</sup> See Slides 14 and 15 of my October 2007 Tutorial.

For each drug, the proportion was more constant than the proportion over all drugs. See Attachment B.1.

- b) *This finding certainly undermines McKesson's strong assertions that there is no constant relationship between TPPs payments to PBMs and IMS measures of reimbursement at retail. This finding certainly contradicts McKesson's assertions that I am wrong. This finding certainly indicates to the Court that there is a consistent correlation between IMS reimbursement data and the TPP claims data.*<sup>13</sup>
- There is an essentially *constant relationship* between the Cigna claims data and the IMS data. The Cigna claims data and the IMS data are *consistently correlated*. If Dr. Willig has opined that constancy "*can't be the case*," he is wrong in the case of Cigna. If the "*constant relationship theory makes no sense*," why do we find a fairly constant relationship in the real world?
  - If there were significant mitigation on the part of Cigna relative to all other payors, the ratios of the average Cigna claim amount relative to the average IMS reimbursements at retail should systematically and measurably decline over time over all drugs. *They do not.*
- c) I present in Attachment B.1 monthly measures of the inflation in reimbursement for each of the drugs measured with the IMS data and with the Cigna claims data.

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<sup>13</sup> In the *Motion Hearing*, in colloquy with Court, Ms. Schechter states (emphasis added):

MS. SCHECHTER: "Now he says, 'I know that because I'm going to take IMS data. I'm going to apply it with *my constant relationship theory*, and from that, I can capture and look at TPP mitigation' ... That's his proposition, and, your Honor, I think *there are three major points why that is not so*. ... *The first point is that Dr. Hartman's IMS data and the constant relationship theory will not account for TPP mitigation in their contracts with PBMs*. ... "Nothing that Dr. Hartman has now come back with with respect to IMS data and a constant relationship theory changes what you thought before. *What you thought before is that there was some mitigation happening that couldn't be captured by this aggregate damage model*. (pp. 23-25). ...

THE COURT: ... And I know for a fact, I mean, given all the discovery that we've had, and basically also all the knowledge I've gained in the multidistrict litigation, I've never heard anyone say that it isn't roughly the same, okay? So I need someone to actually -- maybe there's something in the record I'm missing. There's nothing that says it isn't basically the same, or at least it isn't *consistently correlated*.

MS. SCHECHTER: *And when you say "the same," you mean a constant relationship?*

THE COURT: Yes. In other words, either it's the exact same --

MS. SCHECHTER: Right, or it's constant. That's what Dr. Hartman says.

THE COURT: -- or it's constant.

MS. SCHECHTER: *To the contrary, Dr. Willig says, no, that can't be the case*. ... So hear me out while I explain to you why *the constant relationship theory makes no sense*. The first thing is that it's not supported in any of the economic literature." (pp. 26-27)



Note the following:

- The Mark-Up Inflation Scheme was implemented for all drugs in Attachment B.1 in January 2002 except for Celebrex, for which the spread was increased in November 2001.
  - In my damage calculation, I have measured damages relative to reimbursement prior to the implementation of the Mark-Up Inflation, ***corrected for changes in WAC***. At the time of the implementation of the 5% Scheme for each of these drugs, their WACs were increased and those increases are reflected in the IMS and the Cigna claims data.
  - Note that the reimbursement rates at retail (IMS) and paid by Cigna increase periodically, due to WAC increases. For simplicity of this discussion, I do not net out those increases in WAC. Those WAC increases are the same for all payors (all IMS payors) and Cigna for each drug; netting them out would not alter the comparative results.
- d) ***The important comparative result is the following. The percentage increases in reimbursement measured in the Cigna claims data are essentially the same as the percentage increases measured in the IMS data. There is a consistent correlation. There is no evidence of systematic mitigation by Cigna over all drugs that the IMS data obscures or neglects over the period for which I have data.***

16. For GE retail claims data, the comparison demonstrates similar results with some caveats.

- a) For each drug, the average monthly amount reimbursed by GE and booked in their claims data was less than the amount reflected by the IMS data. As with Cigna, ***this amount was nearly constant over time and quite similar across drugs.***
  - Relative to the average reimbursement at retail, GE pays more than Cigna, which is not surprising given Cigna's size.
  - The average amount paid in the GE claims for the most part is 93%-96% of the IMS amount.
- b) The monthly amounts paid by GE to their PBM by drug are ***consistently correlated*** with the IMS monthly average over all payors.
- c) On a percentage basis, the Mark-Up Inflation measured by the GE claims data is equal to or slightly less than the percentage inflation measured by the aggregate IMS data, for the most part. There are some examples, such as Prilosec, for which there are very few claims in some months and the average claim amount is not credible (see March and April 2003). Otherwise, the patterns in Mark-Up Inflation are generally consistent with those found for IMS (and therefore Cigna).

17. In order to induce the Court to make a timely decision regarding Class certification for damages, McKesson counsel states (at p. 50 of the *Motion Hearing*):

“But I think, your Honor, you said that you may decide that you have enough. I think that you can decide that you have enough because you asked Dr. Hartman to come forward with a feasible methodology, and I submit that he did not give you a basis for believing that the IMS data and the constant relationship will do that. If you want to hold a hearing on that, we should agree on an independent expert.”

I contend that I did put forward such a methodology in my previous Declarations. I contend my analysis of the GE and Cigna claims data in Attachment B, data analyzed and proffered by Dr. Willig, demonstrate what I have already stated – there is a consistent correlation and reasonably constant relationship between the aggregate IMS NPA retail data and the claims data of individual TPPs and that IMS data provides a reasonable proxy for TPP claims data for the purpose of calculating the impacts of the Mark-Up Scheme upon TPP reimbursement rates.

18. I conclude that the percentage inflation found in the monthly IMS data for the average retail reimbursement is consistently correlated with the percentage inflation revealed by the GE and Cigna claims data. There is no reason to believe nor any evidence put forward to demonstrate that these two TPPs are not representative of all TPPs. These two are quite different in size and institutional characteristics; yet the proportional impact of the Scheme upon reimbursement has been accurately measured by the IMS data. Indeed, given the relationship of their drug reimbursement rates to AWP, the same percentage inflation impact results can be expected for uninsured cash payors and Medicaid. Hence, at an aggregate level, the use of IMS data will summarize, at a sufficiently accurate level, the relative inflation of drug reimbursements for all Class members. Hence, the IMS data has provided an accurate measure of aggregate Class-wide damages.

19. Of course, as three distinct groups, the uninsured cash payors, Medicaid and the TPPs will have different average reimbursement rates, relative to the overall average reimbursement rate (from IMS NPA) and relative to each other. That fact implies that the quantum of damages caused by the ***consistent percentage*** Mark-Up Inflation will differ across the three groups. However, such variation in the quantum of damages is a standard issue addressed at the claims administration phase of every class action. I have performed such allocation analyses regularly, once aggregate damages have been calculated and/or an aggregate settlement amount has been determined.

### C. Supplemental and More Detailed Analyses

20. Remember, the ***IMS data are used precisely to avoid time-consuming and expensive surveys of TPPs and other payors.*** That is why drug manufacturers, drug policy advocates and the courts have relied so heavily upon IMS data. If the Court should accept McKesson’s baseless questions about the reliability and interpretation of the IMS data and should so rule, we could re-create another version of the IMS data by sampling a small yet representative and adequate number of TPPs and retailers. We could then analyze more fully those additional TPP-based claims data. Based upon my experience with such claims data, such an effort would further confirm what we have

found with the GE and Cigna claims data. This option is expensive, time consuming and in my opinion unnecessary.

21. Likewise, we could survey and analyze the data of several large PBMs, to assess the extent to which the amounts paid by the PBMs to retailers for the Appendix-A brand name drugs or for all brand name drugs were correlated with or equal to the amounts paid by TPPs to the PBMs for those drugs. Based upon my experience with claims data and PBM data, such an effort would further confirm my analysis to date. This option will be quite difficult to implement because the PBMs are extremely proprietary about their data.

22. We should certainly obtain the IMS data production of the NPA data for the three distinct payor groups (TPPs, uninsured cash payors and Medicaid) over the entire Class Period. As I have stated above (footnote 8), I had not realized that such data were available for more than the most recent 24 months. Such a data request from IMS requires a special order and is expensive; I have been told it could cost approximately \$150,000.

**/s/ Raymond S. Hartman**

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Raymond S. Hartman

Executed on November 28, 2007

**Attachment A**

January 2007

**Raymond S. Hartman**  
*Curriculum Vita*

Date of Birth: 3/31/47

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**DEGREES**

B.A. (MAGNA CUM LAUDE) Princeton University 1969

M.S. Massachusetts Institute of Technology 1971

Ph.D. Massachusetts Institute of Technology 1977

**Ph.D. DISSERTATION**

An Oligopolistic Pricing Model of the U.S. Copper Industry (MIT, 1977)

**HONORS, SCHOLARSHIPS, AND FELLOWSHIPS**

1969-71	National Science Foundation Fellowship to MIT
1965-69	Alfred P. Sloan Scholarship to Princeton
1969	Woodrow Wilson Fellowship Honorable Mention
1965	National Merit Scholarship Finalist

**RESEARCH AND TEACHING INTERESTS**

Econometrics/Statistics  
The Economics of Regulated Industries  
Energy and Environmental Economics  
Microeconomics  
Industrial Organization  
Law and Economics

**POSITIONS**

1967-1969 Research Staff, Financial Research Center and Center for Economic Research, Princeton University

1970 Research Staff, Board of Governors, Federal Reserve Board, Washington, DC

1972-1992 Consultant and Staff Economist, Arthur D. Little, Inc.

1977-1984 Research Faculty, Massachusetts Institute of Technology

1977-1983 Assistant Professor, Department of Economics, Boston University

1983-1989 Associate Professor, Department of Economics, Boston University

1983-1988 Principal & Academic Principal, The Analysis Group

1988-1993 Visiting Associate Professor/Visiting Faculty, Boalt School of Law, University of California, Berkeley

1988-1995 Founding Principal, The Law and Economics Consulting Group

1995-1996 Vice President, Charles River Associates

1996-1999 Senior Consultant, Charles River Associates

1996-2000 Director, Cambridge Economics, Inc.

2000-2004 Special Consultant, Lexecon Inc.

1997- Director and President, Greylock McKinnon Associates

**OTHER PROFESSIONAL ACTIVITIES**

Research Referee, *Bell/Rand Journal of Economics, Resources Policy, IPC Science and Technology Press, Management Science, Land Economics, Science, Energy Journal, Applied Economics, Econometrica, Review of Economics and Statistics, Journal of Business and Economic Statistics, International Economic Review, Journal of Economics and Management Strategy, Pakistan Journal of Applied Economics, Journal of Health Economics, American Economic Review, Review of Industrial Organization*

**PAPERS APPEARING IN OR BEING SUBMITTED FOR PUBLICATION IN REFEREED JOURNALS AND BOOKS**

"Frontiers in Energy Demand Modeling," Annual Review of Energy, 4, 1979.

"The Economic Impacts of Environmental Regulations on the US Copper Industry," with K. Bozdogan and R Nadkarni, The Bell Journal of Economics, 10(2), Autumn 1979, pp 589-618.

"Schumpeterian Waves of Innovation and Infrastructure Development in Great Britain and the United States: The Kondratieff Cycle Revisited," with D. Wheeler, Research in Economic History, 1979, Vol 4, Chapter 2.

"U. S. Demand for Copper: An Introduction to Theoretical and Econometric Analysis," with K. Bozdogan, in R. Mikesell, The World Copper Industry, Resources for the Future, 1979, Chapter 5.

"Some Evidence on Differential Inventory Behavior in Competitive and Non-Competitive Market Settings,"



Quarterly Review of Economics and Business, 20(2), Summer 1980, pp. 11-27.

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"An Analysis of Department of Energy Residential Appliance Efficiency Standards," The Energy Journal, 2(3), Summer 1981, pp. 49-70.

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Contributions of economic forecasting articles to the popular press, such as Management Forum and Nations Business

## PAPERS IN PROGRESS

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"Market Definition and Pharmaceutical Market Competition," with Richard Frank and Haiden Huskamp

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## **MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT); ANALYSIS GROUP, INC., (AG); LAW AND ECONOMICS CONSULTING GROUP (LECG); AND ARTHUR D. LITTLE, INC., (ADL) REPORTS**

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Hartman, "Analyzing and Measuring the Effects of Utility Sponsored Conservation Programs," Arthur D. Little Energy Group Discussion Paper, September 1982, Arthur D. Little, San Francisco.

## **UNPUBLISHED WORKING PAPERS**

"An Examination of the Use of Probability Modeling for the Analysis of Inter-fuel Substitution in Residential Fuel Demand," with M. Hollyer, MIT Energy Lab Working Paper #MIT-EL-77-018WP, July 1977.

"A Critical Survey of Three Copper Industry Models and Their Policy Uses," MIT Energy Lab Working Paper #MIT-EL-77-028WP, September 1977.

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"A Critical Review of Single Fuel and Interfuel Substitution Residential Energy Demand Models," MIT Energy Laboratory Report #MIT-EL-78-003, March 1978.

"A Generalized Logit Formulation of Individual Choice," MIT Energy Laboratory Working Paper #MIT-EL- 79-010WP, February 1979.

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"Consumer Choice Among Alternative Fuels and Appliance Technologies: An Analysis of the Effects of Alternative Energy Conservation Strategies," MIT Energy Laboratory Working Paper #MIT-EL 82-036WP, June 1982.

"Estimation of Hedonic Supply Curves For Residential Water Heaters Using Technical Data and Federal Testing Guidelines," with Alan Cox and Mary Litterman, MIT Energy Laboratory Working Paper #MIT-EL 82-037WP, June 1982.

"A Monte Carlo Examination of the Heckman and the Manski-Lerman Estimators in Discrete/Continuous Models of Demand," October 1986.

"The Value of Service Reliability: Alternative Welfare Measures," with C.K. Woo, October, 1988.

"The Use of Hedonic Analysis in Defining and Measuring Market Size: The Extension of the Merger Guidelines to Heterogeneous Products," Working Paper No. 91-12, Program in Law and Economics. School of Law, Boalt Hall

## **EXPERIENCE IN CONSULTING AND EXPERT TESTIMONY**

### **Overview of Qualifications**

Dr. Hartman is an economist specializing in microeconomics, econometrics and the study of industrial organization. Microeconomics is the science used to analyze and characterize the behavior of groups of consumers and producers that constitute markets. Econometrics is a science that makes use of mathematics and statistics to measure and quantify economic behavior and economic phenomena in markets. The study of industrial organization makes use of both microeconomic theory and econometrics. It focuses upon the structure, conduct and performance of the participants (consumers and producing firms) in markets and industries, for the purposes of predicting behavior and addressing such policy issues as antitrust, regulation and industrial policy.

He has taught economics, conducted economic research and provided economic consulting in his areas of specialization for thirty-five years. He taught economics as an Assistant Professor and Associate Professor within the Department of Economics at Boston University over the period 1977-1988. He taught economics as a Visiting Associate Professor and member of the Visiting Faculty at the School of Law, Boalt Hall, University of California at Berkeley over the period 1988-1993. He was a member of the research faculty at MIT over the period 1977-1982, during which time he conducted research in energy markets for the United States Department of Energy. During the same time, he declined the offer of a Visiting Assistant Professorship within the Department of Applied Economics at MIT, and instead lectured on a selective basis. Since 1971, he has consulted to federal and state governmental bodies, private corporations, law firms, consulting companies, research organizations and international lending organizations. He has been and continues to be a research referee for a variety of academic journals, including the top academic journals in the country. He is the author of more than 100 refereed journal articles, book chapters and research/consulting reports.

He has submitted oral and written testimony before federal and state courts of law and regulatory commissions. His testimony as an expert witness has addressed anticompetitive behavior, merger efficiencies, breach of contract, employment discrimination, patent infringement, class certification and the estimation of damages in a variety of markets and industries including, but not limited to, the pharmaceutical industry, the health care services industry, the electric power industry, the banking industry, the agrochemical industry, the copper industry, the defense industry, the cable TV industry, the tobacco industry, the electrical and mechanical carbon products industry, the medical devices industry and the construction industry. He has consulted to counsel on litigation matters in a broader array of markets.

While his experience has been broadly-based across industries, two industries/markets have been primary subjects of substantial consulting, research and litigation support.

### **Experience in Energy Markets and Regulated Industries**

Since 1977, Dr. Hartman's expertise and experience have involved regulated industries generally and the markets for electric power and natural gas specifically. His consulting and/or litigation assignments have included load forecasting, evaluation of conservation and load management programs, econometric cost analysis, analysis of revenue requirements and rate-making, analysis of value of service reliability, the

analysis of mergers and acquisitions, analysis of industry restructuring, analysis of manipulation of spot and future prices in energy markets, and analysis of contract damages arising from DOE's partial breach of the Standard Contract regarding storage of nuclear waste. In these assignments, Dr. Hartman has consulted for such clients as Arizona Public Service, the Pacific Gas and Electric Company, the Southern California Edison Company, the Southern California Gas Company, the San Diego Gas and Electric Company, Portland General Electric Company, Bonneville Power Administration, General Public Utilities, Northeast Utilities, Niagara Mohawk Power Corporation, the Delmarva Power Corporation, Florida Power Corporation, Sithe Energies, the California Energy Commission and Public Utilities Commission, the Missouri Public Service Commission, the Rhode Island Division of Public Utilities, the Attorney General of the State of Massachusetts, the Electric Power Research Institute, the Gas Research Institute, the U.S. Department of Energy, the U.S. Department of Justice, the World Bank, and the governments of Indonesia and Thailand. He has consulted for a number of other clients whose identity must remain confidential.

### **Experience in Health Care and Pharmaceutical Markets**

Over the past 10 years, Dr. Hartman has participated as testifying or consulting expert in a wide array of matters related to health-care markets generally and, more specifically, markets for medical devices and pharmaceutical products. For examples, working with a team of health care experts, he submitted written testimony assessing and measuring the impacts of smoking on Medicaid health care costs in the Commonwealth of Massachusetts. He submitted testimony analyzing the competitive impacts upon and damages to a class of dental laboratories caused by the restrictive dealer practices of a dominant U.S. manufacturer of medical prostheses - false teeth. He consulted to the group of wholesaler defendants in the Brand-Name Prescription Drugs Antitrust Litigation, addressing issues of wholesaler pricing across classes of trade. He consulted to counsel to a manufacturer of cardiovascular stents and other related devices in a variety of patent infringement matters, addressing such issues as competition, market penetration of new products and economic damages arising from patent infringement. He consulted for one group of private plaintiffs in the antitrust matter regarding the prescription drugs lorazepam & clorazepate and for the Federal Trade Commission in the matter of Hoechst Marion Roussel, Inc., Carderm Capital L.P. and Andrx Corporation concerning antitrust claims involving the prescription drug Cardizem CD. That consultation addressed issues of market definition, product competition, class certification and damage estimation. He consulted to counsel on the matter of damages to the class of direct purchasers of the prescription drug Taxol and on the matter of damages to the class of indirect end-payer purchasers of the prescription drugs K-Dur, Augmentin, Bextra, Celebrex and Vioxx. He submitted testimony addressing class certification, liability and/or damages for the class of end-payer purchasers in antitrust or RICO litigation concerning the prescription drugs Hytrin, BuSpar, Relafen, Lupron, Premarin, Cipro in the states of New York and California and in the United States, and Neurontin in the United States and Pennsylvania. In the MDL AWP litigation, he submitted testimony in support of the certification of the class of end-payer purchasers of those pharmaceutical products produced by AstraZeneca, the Bristol-Myers Squibb Group, the Johnson & Johnson Group, the GlaxoSmithKline Group and the Schering Plough Group that were alleged to have been the subject of a scheme to fraudulently inflate their Average Wholesale Price (AWP); he subsequently submitted testimony supporting findings of causation, liability and the calculation of damages for those end-payer groups for which class certification was granted. He has consulted to and/or submitted testimony for the Offices of the Attorneys General for the states of New York, Connecticut, Montana and Nevada in analogous matters. His testimony has been the basis for the certification of class in a variety of these matters. His testimony has been the basis for approval supporting settlement agreements in a variety of these and other pharmaceutical matters.

### **Specific Assignments**

1972-1975: In consultation with Arthur D. Little, Inc., Dr. Hartman developed economic impact models to assess the effects of environmental regulations upon the U.S. pollution abatement equipment industry and upon a particular U.S. copper smelting company.

1972-1975: In consultation with Arthur D. Little, Inc., Dr. Hartman developed economic models to assess the regional macroeconomic and industrial impacts of alternative strategies to promote tourism-related industries. The models were used in the United States by the states of Maryland and Maine and for the Philadelphia Bicentennial Commission. Internationally, the models were used by the Ministry of Planning of Mexico to assess the national and regional importance of tourism coming into Acapulco.

1976-1977: Consultation with Arthur D. Little, Inc. for the U.S. Environmental Protection Agency. The effort involved the design, estimation and implementation of an econometric simulation model that was used to assess the impact of pollution abatement legislation on the U.S. copper industry. The model was designed to incorporate engineering cost estimates attributable to the abatement legislation while accounting for the noncompetitive pricing behavior in the industry. The model was used to evaluate and revise proposed abatement legislation. This analysis was the basis for Dr. Hartman's Ph.D. dissertation and several of his publications.

1977-1982: Working as the testifying expert, Dr. Hartman analyzed the presence of a price-fixing conspiracy among the major U.S. copper producers during the 1970's. His testimony addressed issues of liability and developed a model of damages. See

Affidavit to United States District Court for the Southern District of New York, *J.N. Futia Co., Inc., Plaintiff, Against Phelps Dodge Corporation, et al., Defendants*, 78 Civ. 4547 (ADS), 1978.

Deposition for United States District Court, Southern District of New York for *Reading Industries, Inc., et al. (Plaintiffs) against Kennecott Copper Corporation, et al. (Defendants)*, 17 Civ. 1736 (MEL), 1982.

1979: Working for the California Energy Commission, Dr. Hartman developed and presented a Statement of Opinion and Critical Review of Selected Energy End-Use Models and Proposed Specifications for PG&E End-Use Modeling Efforts before the California Energy Commission Hearings on Utility Construction and Siting, November 26-30, 1979.

1984: Testifying expert for the class of all individuals who employed the services of members of Massachusetts Furniture and Piano Movers Association. The analysis developed an econometric model to assist in certifying the class and measuring the damages common to that class. See

Affidavit to United States District Court for the District of Massachusetts in the Matter of *Kenett Corporation et al v. Massachusetts Furniture and Piano Movers Association Inc. et al*, May 1984, Civil Action No. 82-140-Z.

1984-1986: In consultation with the U. S. Postal Service, Dr. Hartman identified appropriate econometric methods for analysis of the determinants of Postal Service costs. The particular methods he suggested were "hedonic" cost techniques, which are specifically designed to account for the fact that both increased levels of production and improved product attributes increase costs. The techniques assisted the Postal Service in quantification of the cost impacts of the attributes of service quality for alternative classes of service. For example, the techniques allowed for estimation of the differential cost impacts of alternative service priorities, size and weight attributes of the various classes of mail.



He later applied these techniques for a group of second class mailers. The analysis was introduced before the Postal Service Commission to assess whether proposed postal rate changes reflected actual costs.

1984-1986: The development of econometrically-based strategic planning models, which allow for estimation of the effects on corporate profits of alternative product design and pricing strategies. The models allow for examining specific design strategies by explicitly incorporating detailed product attributes. The models were developed for Westin Hotels and Shell Oil. The Westin models have been implemented into an interactive PC tool that facilitates pricing decisions at the front desk.

1985: For analysis presented before the International Trade Commission, Dr. Hartman helped develop and estimate a model to evaluate the domestic effects of importation of certain synthetic aramid fibers. The analysis was used in adjudicating an international patent infringement complaint.

1985-1986: Dr. Hartman participated in an analysis of one of the nation's largest mutual funds. The study was undertaken as part of a class action alleging inappropriate management fees. The study assessed competition in the money market mutual fund industry. It measured investors' sensitivity to changes in yield and to the level of services provided. It also statistically identified the determinants of the costs of providing mutual fund services.

1985-1986: The development for GTE Laboratories of econometric demand models for analysis and measurement of the determinants of demand for telecommunications services. The models explicitly address the separate customer decisions to subscribe to one of several telecommunications carriers and the demand for telecommunications services, conditional upon the subscription decision. The analysis was employed by GTE to assist their subsidiary, GTE Sprint, in the design of marketable services, where the services were differentiated by tariff, perceived service quality, provider reputation, and specialized customer services. The analysis is summarized in the paper

"Estimation of Household Preferences for Long Distance Telecommunications Carrier", *Journal of Regulatory Economics*, Volume 6, 1994.

1985-Present: Dr. Hartman has performed a variety of economic damage analyses in cases of personal injury, wrongful injury and wrongful death. He has worked for both plaintiff and defendant. He has been deposed in such matters as recently as 1995.

1986: For a major natural gas pipeline, preparation of an analysis of the effects of natural gas deregulation as proposed in the Federal Energy Regulatory Commission's Notice of Proposed Rulemaking No. 436.

1986-1987: Working for the class of owners of selected General Motors' X Cars and VW Rabbits, Dr. Hartman specified and estimated econometric models that assisted in the certification of class and estimation of class damages. The damages flowed directly from allegedly-concealed design flaws in these automobiles. The methods are described in

"The Use of Hedonic Analysis for Certification and Damage Calculations in Class Action Complaints," with M. Doane, *The Journal of Law, Economics and Organization*, Fall 1987.

1986-1987: Development of damage models for litigation in high technology industries. The models

were developed in several cases. One involved alleged patent infringement by a major Japanese semiconductor firm, and the second involved market foreclosure of a domestic minicomputer emulator. In these efforts, Dr. Hartman developed econometric models to estimate the market potential, absent the violation, for the particular product foreclosed or whose patent was infringed. The methods are described generically in

"Product Emulation Strategies in the Presence of Reputation Effects and Network Externalities: Some Evidence from the Minicomputer Industry," with D. Teece, *Economics of Innovation and New Technology*, Volume 1, 1990.

1987: Analysis of the competitive effects of relaxing the restrictions on the Bell Regional Operating Companies regarding their vertical extension upstream into equipment manufacture and downstream into the provision of selected telecommunication services. The study was introduced before Judge Greene in the triennial review of the divestiture of the Bell operating companies from AT&T.

1987-1988: For a major gas utility, participation in analysis of the economic effects arising if bypass of an existing pipeline were allowed by state and federal regulation. The analysis developed methods for assessing when competitive bypass is socially desirable. The analysis also developed and used an econometric model to simulate the effects of bypass on demand and prices.

1988: Analysis of the competitive effects the acquisition of trade secrets through the predatory hiring of a competitor's essential labor force. See

Analysis submitted in testimony in the case *Universal Analytics Inc. v. MacNeil Schwendler, Corp.*

1988-1989: As part of their proposed acquisition of Public Service of New Hampshire, Dr. Hartman was retained by Northeast Utilities, Inc. to develop and estimate load forecasting models. The models were used to assess the demand implications of alternative rate assumptions proposed as part of the acquisition. The forecasts were introduced as part of Northeast Utilities' filings before the bankruptcy court, the state public utility commissions, the SEC and the FERC.

1989: As part of major antitrust litigation against the leading vendors of airline computer reservation systems, Dr. Hartman helped develop liability analysis and models for the estimation of damages.

1989: As a proposed testifying expert for Parnelli Jones, Inc., Dr. Hartman analyzed the antitrust implications of Firestone's retail trade practices, particularly alleged vertical and horizontal restraints of trade. He designed damage models for the alleged violations.

1989 - Present: Dr. Hartman has performed and continues to perform the market analyses required for Hart-Scott-Rodino applications and second requests supporting mergers and acquisitions in a variety of industries, including specialty chemicals, airlines, health care and medical diagnostic products, and energy products and services.

1989-1990: Dr. Hartman participated as a principal investigator and testifying expert for the Division of RatePayer Advocates of the California Public Utility Commission in an analysis of the economic and legal implications of the proposed merger between Southern California Edison Company and San Diego Gas and Electric Company. Dr. Hartman's responsibilities included overall study design, econometric analysis of

scale and scope economies arising with the merger, and analysis of efficiencies purportedly arising with the coordination of the demand-side management programs of the two utilities. His direct and surrebuttal testimony is found in

California Public Utilities Commission, Division of Rate Payer Advocates, Report on the Proposed Merger of the Southern California Edison Company and the San Diego Gas and Electric Company, Volume V, Chapter II, Application 88-12-035, February, 1990, Exhibit 10,500; and

California Public Utilities Commission, Division of Rate Payer Advocates, Report on the Proposed Merger of the Southern California Edison Company and the San Diego Gas and Electric Company, Surrebuttal: Econometric Analysis of Merger Impacts, Application 88-12-035, July, 1990, Exhibit 10,511.

1989-1990: Working with Arthur D. Little, Inc., Dr. Hartman participated as a principal investigator and testifying expert in a merger study for several small New England utilities within Nepool. Dr. Hartman designed and implemented a statistical study of returns to scale and scope in the industry. Using the statistical results, Dr. Hartman developed opinions regarding the efficiency effects of the proposed merger. His analysis appears as an independent Appendix to

Arthur D. Little, Inc., Evaluation of EUA's Proposed Acquisitions of UNITIL and Fitchburg, Report to Gaston and Snow, March 12, 1990, presented in support of the acquisition to the Securities and Exchange Commission and the New Hampshire Public Utilities Commission.

1990: Working for a group of commodity futures exchanges, Dr. Hartman participated as Principal Investigator in a critical review of a statistical and econometric study performed by the Commodity Futures Trading Commission. The CFTC study was developed to assess the effects of dual trading on commodity futures markets, in order to implement proposed regulations curtailing such trading.

1990: Working with Barakat and Chamberlin, Inc., Dr. Hartman developed a Ramsey pricing model for Arizona Public Service Corporation. The Ramsey pricing model was used to develop and explore alternative rate strategies for a variety of residential, commercial and industrial market segments. The analysis was submitted in formal rate hearings.

1990-1992: Working with the Technology Research Center of Arthur D. Little, Inc. for the United States Postal Service, Dr. Hartman specified and estimated econometric models to analyze the determinants of productivity for the largest 120 post offices in the United States. The econometric models are being used to identify the most and least productive offices, with the purpose of learning from the performance of the most productive offices in order to improve the performance of the least productive offices. The models are being used to design and implement incentive regulation mechanisms to increase productivity across post offices.

A second set of econometric models have been specified and estimated to quantify the effects of the attributes of alternative postal services and rate classes upon total postal service costs. The results of this analysis are being used to design postal rates for alternative classes of service which reflect the real costs of providing the services. The analysis and its results will be introduced into the postal rate hearings.

1990-1997: Working with the World Bank, Dr. Hartman has specified and is estimating a set of econometric models to measure both the level and types of pollutants emitted by United States plants and establishments and the costs of abating those pollutants. The models identify and quantify, at the plant level,

the relationship between the emission of approximately 300 pollutants and the scale of production, the types of technology used, the age and characteristics of the plant and equipment used, the extent to which abatement equipment has been installed, and the costs (capital and operating) of abating alternative pollutants.

The models will be used in the following ways in developing countries and Eastern European countries: to assist the countries to predict and assess the environmental implications of reliance upon certain technologies and industries in development; to assess the effectiveness of alternative regulatory methods for abating pollution, including effluent standards, effluent taxes, effluent licenses, technology standards, effluent banks, and alternative property right schemes; to implement incentive regulation mechanisms to better stimulate abatement compliance; and to identify and prioritize those industries that can abate certain pollutants at least cost.

As part of this effort, Dr. Hartman has also designed a specific incentive regulation system for pollution abatement compliance in Indonesia. The system is based upon the most recent theory in regulated incentive mechanisms. The system will ultimately evolve into an effluent bank or a system of effluent fees. If the effort is successful, it will form the basis for environmental institutions in other developing countries. In the process of designing this system, he has reviewed the institutional and statutory basis for environmental policy in Indonesia.

Also as part of this work, Dr. Hartman is in the process of designing the institutional and statutory structures for Environmental Protection Agencies in a variety of developing countries. The institutional structures will be designed to articulate and implement pollution abatement policies that are informed by the econometric modeling described above.

1991: Dr. Hartman participated as a principal investigator and testifying expert for the Missouri Public Service Commission in a critical analysis of the proposed merger between Kansas Power and Light Company and Kansas Gas and Electric Company. Dr. Hartman's responsibilities included overall study design, analysis of scale and scope economies arising with the merger, analysis of unanticipated transitional cost arising with the merger and an econometric event study of the stock market's response to the merger. His testimony appears in

A Critical Analysis of the Proposed Merger Between Kansas Power and Light Company and Kansas and Electric Company, Report to the Missouri Public Service Commission, March 25, 1991.

1991: Working for the Resolution Trust Corporation in its litigation against Michael Milken and Drexel Burnham Lambert Inc., Dr. Hartman developed data and econometric models to measure the size of the relevant antitrust markets dominated by Drexel and to estimate the size of the economic damages produced by Drexel's alleged monopolization of those markets.

1991-1992: Working for the Indonesian government and the United States Agency for International Development, Dr. Hartman critically reviewed the structure of the Indonesian electric power industry and the institutions regulating that industry. The purpose of the analysis was to assist the government with privatizing their energy industries. His analysis focused upon the following: developing better data and models for predicting demand and supply; identifying and implementing more efficient industrial structures; and developing better regulatory regimes.

1992: Working for the World Bank, Dr. Hartman designed methods to measure and compare the social value of the environmental effects of alternative development projects, at the microeconomic and macroeconomic levels. His analysis focused upon standard and contingent valuation survey approaches and

their use in econometric settings.

1992-1993: Working for the World Bank in Bangkok, Dr. Hartman characterized and critically analyzed the environmental effects of Thailand's energy use patterns. He focused upon the use and production of electric power, petroleum, coal and natural gas. He developed recommendations for environmental policy changes that included, but were not limited to, fuel taxes, effluent standards, technology standards, and privatization of environmental monitoring within a "bubble" policy approach.

1992-1993: Working for a biomedical company (a producer of vascular grafts) in an antitrust situation, Dr. Hartman designed and implemented survey techniques and econometric models to measure the size of the relevant markets and market power within those markets.

1992-1993: In a proceeding before the International Trade Commission, Dr. Hartman critiqued ITC econometric methods used for estimating elasticities of demand, supply and substitution among domestic and imported products. His focus was selected steel products. He formulated and estimated alternative models and methods to improve the existing estimates. He developed presentation materials for the Commission and testified before the Commission. His testimony is included in

LECG, Petitioners' Economic Testimony in the Matter of Certain Carbon Steel Flat Products, Final Hearing before the United States International Trade Commission, June 29-30, 1993; and

LECG, Petitioners' Post Hearing Brief in the Matter of Certain Carbon Steel Flat Products, before the United States International Trade Commission, July 7, 1993.

1992-1997: Working for the World Bank, Dr. Hartman has designed and is currently implementing a set of regional econometric/engineering models that accurately portray and predict the economic, environmental, infrastructural and socio-demographic effects of large-scale, World-Bank-funded infrastructural projects. The models combine input-output and econometric methods.

Given the Bank experience that many of their financially-sponsored projects create significant unanticipated environmental effects, the models are designed to be broad and comprehensive enough to incorporate and predict all important effects. The models systematically characterize the relationship between resource-based economic growth and the regional environment in which that growth occurs.

The models are currently being implemented for assessing project developments in the Carajas region of the Brazilian Amazonian rain forest, which is a large, dynamic and ecologically sensitive frontier area. The methods implemented for Brazil will be generalized for analysis of economic growth in ecologically similar areas, such as the Lake Baikal region of the former Soviet Union.

1993-1994: Working for the Commonwealth of the Northern Mariana Islands, Dr. Hartman developed and presented testimony rebutting a complaint by the United States Department of Justice that the Public School System of the Commonwealth practiced employment discrimination against teachers of Filipino and native Carolinian origin. Dr. Hartman's testimony examined both hiring and compensation practices. His testimony included hedonic regression analysis of the market for public school teachers in the islands. This analysis measured how teacher attributes and qualifications determined teacher salaries and hiring. The results of the analysis indicated that salary differentials resulted from differences in teacher qualifications rather than discrimination.

1993-Present: Working either as the testifying expert or supporting other testifying experts, Dr. Hartman has

participated in a variety of patent infringement cases. He has developed, supported and estimated alternative theories and measures of damages for manufacturers of coaxial cable and a variety of alternative medical devices.

1993-1998: Working as the testifying expert, Dr. Hartman developed models estimating the damages to the business of a construction general contractor that were caused by the malicious prosecution of the contractor's insurance company.

1994: Working for the United States Wheat Associates in a proceeding before the ITC, Dr. Hartman designed and implemented an econometric study to assess and quantify the extent to which Canadian Wheat Board imports into the U.S. undersold domestic supplies and thereby materially interfered with the United States Department of Agriculture Wheat Program. The econometric study was hedonic. The study measured how non-price attributes are valued in U.S. wheat markets. The non-price attributes analyzed included such things as protein content, shipment defects, moisture content and a number of end-use performance characteristics. Having measured the value of these attributes in U.S. markets, the analysis indicated how the Canadian Wheat Board fixed import prices below market levels, given the attributes of the imported wheat.

1994: Working as a testifying expert for Gallo Wines in a proceeding before the ITC, Dr. Hartman designed and implemented a statistical study of the US wine industry that analyzed the impacts of Chilean wine imports upon the domestic industry that would result from the inclusion of Chile in a Free Trade Agreement with the US.

1994: Working as a testifying expert for an insurer of a member of the Asbestos Claims Facility and Center for Claims Resolution, Dr. Hartman developed a statistical analysis estimating alternative indemnification liabilities expected under the Settlement Share Analysis of the Center for Claims Resolution and under the tort system. The results were used to make strategic decisions regarding the desirability of participating in the Class Action Settlement relative to litigating the claims.

1994: Working for several regional Bell Operating companies, Dr. Hartman has developed models and survey procedures to analyze and quantify the determinants of demand for local services, long-distance services and PCS services. The models quantify how consumers respond to and select among alternative carriers who differentiate their services by performance attributes and vendor reputation. The models also estimate the level of service demand, conditional upon the selection of service vendor. The models are being used to quantify the nature of competition among local carriers and long-distance carriers in the Intralata market. The models are also being used to help develop bidding strategies for specific RBOCs as they participate in the FCC auctions for the PCS spectra.

1995: Working as a testifying expert for a group of independent television stations and program producers, Dr. Hartman developed an econometric analysis of the impacts of the Prime Time Access Rule (PTAR) upon the economic performance of independent television stations. The analysis was submitted to the Federal Communications Commissions as part of their consideration of the repeal of the Rule. Dr. Hartman's analysis proved that PTAR had a strong, statistically significant effect upon the economic performance of these stations, and that its repeal would adversely impact them.

His testimony is included in

The Economic Effects of Repealing the Prime Time Access Rule: Impact on Broadcasting Markets and the Syndicated Program Market, Report prepared by LECG and presented before the Federal Communications Commission, MM Docket No. 94-123, March 7, 1995.



1995: Working for a big six accounting firm, Dr. Hartman designed and implemented a hedonic regression analysis to calculate transfer prices under the comparable uncontrolled price (CUP) method. The analysis is discussed in

"The Use of Regression Techniques in Transfer Price Analysis," with Delores Wright and J.D. Opdyke, *European Taxation*, 1996.

1995-1996: Working as the testifying expert for a major high tech firm in New England, Dr. Hartman has developed rebuttal and affirmative testimony to rebut claims of age discrimination in the termination of a group of employees over forty. His rebuttal testimony involved critically reviewing statistical analyses purporting to demonstrate disparate treatment and disparate impact. His affirmative testimony has involved designing and implementing econometric models to identify and estimate those factors actually determining the compensation and termination decisions of the defendant.

1995-1996: Working as the testifying expert for the Office of Attorney General of the State of Massachusetts, Dr. Hartman has analyzed and helped develop the State's positions on the following issues: restructuring the electric utility industry in Massachusetts and New England; regulating those entities in the restructured industry that will remain subject to regulation; and valuing those assets that may be stranded as a result of restructuring. As part of the effort, Dr. Hartman also critically reviewed the restructuring proposals of the largest utilities in the state. His testimony appears in

"The Market for Power in New England: The Competitive Implications of Restructuring," a report prepared for the Office of the Attorney General, Commonwealth of Massachusetts and submitted February 16, 1996 in support of their filing to the Department of Public Utilities as part of DPU 95-30, which was initiated August 15, 1995.

1995-1996: Working as the testifying expert, Dr. Hartman represented Florida Power Corporation in a contract dispute with Independent Power Producers. His analysis and testimony focused upon issues of damages incurred as a result of a breach of contract.

1995-1999: Working with a team of economists, Dr. Hartman represented the group of wholesalers in the retail prescription drug price fixing conspiracy case. His efforts included industry analysis and participation in cross examination of plaintiffs' experts.

1996: Working as the testifying expert for the Division of Public Utilities of the State of Rhode Island, Dr. Hartman has analyzed and helped develop the State's positions on restructuring the electric utility industry in Rhode Island and New England, for both the State's Public Utilities Commission and the FERC. As part of the effort, Dr. Hartman also critically reviewed the restructuring proposals of some of the utilities in the state. His testimony appears in

"The Division Plan to Restructure the Electric Utility Industry in Rhode Island," Volume 2 of Supporting Testimony to the State of Rhode Island and Providence Plantations Public Utilities Commission, in re: Electric Industry Restructuring, Docket 2320, April 12, 1996.

1996: Working with a team of engineering firms, an international investment banking firm, a big six accounting firm and several national law firms, Dr. Hartman developed models of demand, supply and futures markets in restructured electric power markets to assist a major industry participant in evaluating specific

alternative acquisition strategies.

1996: Working with a team of economists developing evidence for presentation before the High Court of New Zealand, Dr. Hartman critically reviewed and rebutted a variety of econometric analyses of natural gas markets and more broadly-defined energy markets in New Zealand. These analyses were used to determine the size of antitrust markets for a variety of energy products.

1996: Dr. Hartman was retained by a major mid-west utility to critically review and rebut analyses and evidence presented before the FERC and the relevant State Commissions concerning the competitive impacts of the proposed Primergy merger.

1996-2003: Working as the testifying expert, Dr. Hartman analyzed the employment practices and procedures of the Florida Power Corporation during a reduction in force, to assess the validity of a complaint that those practices and procedures resulted in a pattern of age discrimination. In his testimony, Dr. Hartman implemented a variety of statistical and econometric analyses to address and quantify claims of disparate impact and disparate treatment.

1996-1997: Working for US Airways with a team of economists, Dr. Hartman specified and estimated a variety of econometric consumer choice models to measure customer preferences for the services of alternative air carriers in a cross section of US-European origin-destination markets. The models were used to evaluate the economic impacts of both the proposed alliance between American Airlines and British Airways and alternative proposals to condition that alliance.

1996-1997: Working as the testifying expert, Dr. Hartman represented a major national retail pharmaceuticals wholesaler in litigation brought by a regional distributor alleging monopolization of wholesale services to distinct classes of trade. His analysis addressed market definition, the analysis of competition generally and analysis of the competitive impact of specific contractual arrangements.

1997: Working with a team of experts, Dr. Hartman analyzed economic impacts of the construction of the Warrior Run Cogeneration plant which was under construction in Western Maryland and was contracted to sell power to Allegheny Power System's (APS) Maryland subsidiary, Potomac Edison.

1997: Working as the testifying expert for the Office of Ratepayer Advocates of the California Public Utilities Commission, Dr. Hartman critically reviewed the efficiencies estimated by Applicants to be induced by the proposed merger of Pacific Enterprises and Enova Corporation.

1997: Working with a team of economists, Dr. Hartman prepared affirmative and rebuttal testimony in a breach of contract matter in the pharmaceutical industry arbitrated before the International Chamber of Commerce.

1997-2000: Working as the testifying expert, Dr. Hartman developed analysis supporting certification of class and estimation of damages for the class of purchasers of thermal fax paper in the US over the period 1990-1992 who were damaged as a result of a price fixing conspiracy by major suppliers.

1998: Working as the testifying expert, Dr. Hartman analyzed the employment practices, procedures and personnel data of the Florida Power Corporation, in general and in particular, to assess the validity of a complaint that a specific employee had been subjected to racial discrimination.

1998-1999: Working with a team of economists for the Office of the Attorney General of the State of Massachusetts, Dr. Hartman developed and implemented econometric models to analyze and measure the health care costs arising under the Medicaid program that have been attributable to smoking. The analysis

appears in the following documents:

David M. Cutler, Arnold M. Epstein, Richard G. Frank, Raymond S. Hartman, Charles King and Joseph P. Newhouse, *The Impact of Smoking on Medicaid Spending in Massachusetts: 1970-1998 - Report on Methods*, June 15, 1998;

David M. Cutler, *et. al.*, *The Impact of Smoking on Medicaid Spending in Massachusetts: 1970-1998 - Results From The Inclusive Approach for Adults*, July 1, 1998;

David M. Cutler, *et. al.*, *The Impact of Smoking on Medicaid Spending in Massachusetts: 1991-1998 - Results From The Disease-Specific Approach for Adults and Overall Summary*, July 11, 1998.

Drawing upon these efforts, Dr. Hartman worked with the same team of experts to analyze the economic impacts of the Master Settlement Agreement and to present their findings to the Tobacco Fee Arbitration Panel.

1999: Working as one of two testifying experts for the Office of the Attorney General of the Commonwealth of Massachusetts, Dr. Hartman critically analyzed potential rate increases relevant to Joint Petitions introduced by both Eastern Enterprises/Colonial Gas Company and Boston Edison/Commonwealth Energy Systems. His testimony appears as

Joint Testimony of Seabron Adamson and Raymond Hartman on Behalf of the Massachusetts Attorney General, in the matter of the Joint Petition of Eastern Enterprises and Colonial Gas Company For Approvals of Merger Pursuant to G.L. c. 164, §§ 96 and 94, DTE 98-128, March 26, 1999.

Joint Testimony of Seabron Adamson and Raymond Hartman on Behalf of the Massachusetts Attorney General, in the matter of the Joint Petition of Boston Edison Company, Cambridge Electric Light Company, Commonwealth Electric Company and Commonwealth Gas Company For Approval of Rate Plan Pursuant to G.L. c. 164, §§ 76 and 94, DTE 99-19, April 30, 1999.

1999-2000: Dr. Hartman was retained by a group of industrial purchasers of copper to develop and implement methods and models to assess liability and measure damages in the matter involving the manipulation of the spot and future prices of copper on the London Metals Exchange by Sumitomo Corporation and Yasuo Hamanaka over the period 1987-1996.

1999-Present: Dr. Hartman consulted with counsel and the testifying expert in the development of data and models needed to certify class and measure damages in a price fixing case involving the manufacturer (Mylan) of generic clorazepate and lorazepam.

1999-2001: Working as the testifying expert, Dr. Hartman analyzed liability arising from a variety of restrictive dealer arrangements implemented by Dentsply International Inc., a U.S. manufacturer of artificial teeth, to foreclose entry by rival manufacturers from the US dental-laboratory dealer network. Dr. Hartman developed and implemented methods to measure damages to the class of dental laboratories that purchased artificial teeth from Dentsply at prices above the competitive prices that would have obtained absent the restrictive dealer arrangements.

1999-2000: Working with a team of economists for the Federal Trade Commission, Dr. Hartman analyzed the pro-competitive and anti-competitive nature of settlement agreements between generic and pioneer drug manufacturers resolving patent infringement litigation arising from certification under Paragraph IV of the

Hatch Waxman Act (Drug Price Competition and Patent Term Restoration Act). Particular settlements analyzed include the settlement between Abbott Laboratories and Geneva Pharmaceuticals regarding the drug Hytrin and the settlement between Hoechst Marion Roussel (Aventis) and Andrx Corporation regarding the drug Cardizem.

1999-2000: Working as the testifying expert for the class of purchasers of Nine West shoes, Dr. Hartman was asked to analyze liability and measure damages arising from an alleged conspiracy to raise and maintain the prices of women's shoes manufactured by the Nine West Group Inc. and sold by a variety of general merchandise retailers through their upscale retail department stores. The defendants in the case included Nine West Group Inc., Federated Department Stores, Inc., Dayton Hudson Corporation, Lord and Taylor, Nordstrom, Inc., May Department Stores, Macy's, Bloomingdale's, Inc., and other general merchandise retailers.

2000: Working with the testifying expert, Dr. Hartman assisted in the analysis and estimation of economic damages to a Class defined as all smokers with 20-pack years each of whom contracted lung cancer which was substantially contributed to by cigarette smoking.

2000: Working with a team of economists, Dr. Hartman developed econometric models to analyze and measure the impacts of subject imports, non-subject imports and factor price changes upon the prices of structural steel beams during the period 1998-1999. The work was presented before the International Trade Commission.

2001: Working with a team of economists, Dr. Hartman developed econometric models to analyze and measure the impacts of subject imports, non-subject imports and factor price changes upon the prices of structural steel beams and during 2000. He also developed econometric models to analyze and measure the impacts of subject imports, non-subject imports and factor price changes upon the prices of cold rolled and hot rolled steel during the Period of Inquiry of 1997-1999. Both efforts were presented before the International Trade Commission.

2001-present : Working as the testifying expert, Dr. Hartman developed and submitted testimony in support of class certification of and the calculation of damages to the class of indirect purchasers of the anti-hypertensive drug, Hytrin, produced by Abbott Laboratories and the generic equivalent of Hytrin, generic terazosin hydrochloride, produced by Geneva Pharmaceuticals. The class alleges monopolization and violation of the Hatch Waxman Act (Drug Price Competition and Patent Term Restoration Act).

2001-Present: Working as consultant and testifying expert, Dr. Hartman has been retained by counsel to the classes of indirect or direct purchasers of a variety of branded pharmaceuticals (including but not limited to Augmentin, Bextra, Cipro (New York, California, U.S.), BuSpar, Celebrex, Vioxx, K-Dur, Taxol, Lupron, Relafen, Paxil, Neurontin, Remeron, Tamoxifen, Premarin, Wellbutrin and Zyprexa) to analyze and submit testimony dealing with class certification, liability, market definition, damage calculations and settlement allocations arising from violations of the Hatch Waxman Act (Drug Price Competition and Patent Term Restoration Act), related state-specific unfair competition statutes and the RICO Act.

Dr. Hartman's testimony in this area has been relied upon (and cited thereto) for certification of end-payer consumer classes in the following matters:

- *In re: Terazosin Hydrochloride Antitrust Litigation*, United States District Court, Southern District of Florida, Case No. 99-MDL-1317-Seitz/Klein [Order Granting

Indirect Purchaser Plaintiffs' Motions for Class Certification of State-Wide Classes, April 8, 2004]

- *In re Cipro Cases I and II*, D043543 (JCCP Nos. 4154, 4220), Court of Appeal, Fourth Appellate District, Division One, State of California [Decision affirming class certification not titled but marked as "Not to Be Published in Official Reports," Filed 7/21/04]
- *In re: Relafen Antitrust Litigation*, United States District Court, District of Massachusetts, Master File No. 01-12239-WGY [Memorandum granting certification for an exemplar class, May 12, 2004]

Dr. Hartman's testimony has been relied upon (and cited as necessary) for approval of proposed settlement allocations in the following matters:

- *In re: Lupron® Marketing and Sales Practices Litigation*, United States District Court, District of Massachusetts, MDL No. 1430, Master File No. 01-CV-10861-RGS [Memorandum and Order Approving Settlement and Certifying the Class, May 12, 2005]
- *HIP Health Plan of Florida, Inc., On Behalf of Itself and All Others Similarly Situated v. Bristol-Myers Squibb Co. and American Bioscience*, Case Number 1:01CV01295, United States District Court for the District of Columbia
- *In re Buspirone Antitrust Litigation*, MDL No. 1413, United States District Court for the Southern District of New York
- *In re Relafen Antitrust Litigation*, United States District Court, District of Massachusetts, Master File No. 01-CV-12222-WGY
- *In re Remeron Antitrust Litigation*, United States District Court, District of New Jersey, Master Docket No. 02-CV-2007

2001: Working as consultant to counsel for various U.S. steel producers, Dr. Hartman worked with a team of economists to develop econometric models to analyze and measure the impacts of imports, demand and factor price changes upon the prices of domestically produced carbon steel flat products and carbon steel long products in the Section 201 hearings before the International Trade Commission. Dr. Hartman testified before the ITC in the hearings. The Commission decided in favor of most of the products subject to these analyses.

2001: Working as consultant to counsel for Nucor Steel Corporation, Dr. Hartman worked with a team of economists to develop econometric models to analyze and measure the impacts of imports, demand and factor price changes upon the prices of domestically produced carbon steel cold rolled products for preliminary hearings before the International Trade Commission.

2001-2002: Consulting to counsel for the Plaintiff Class, Dr. Hartman analyzed the targeting of youth by cigarette advertisements in the matter *in re Devin Daniels, et. al., v. Philip Morris Companies, Inc., et. al.*, Case Number 719446, coordinated with JCCP 4042.

2001-2003: Working as testifying expert, Dr. Hartman developed and presented statistical evidence analyzing the relative performance of a particular cardiovascular surgeon litigating the fact that his surgical privileges had been revoked as a result of incompetent surgical performance and results. He testified before an arbitration panel in the matter.

2003: Working as the testifying expert for Defendants, Dr. Hartman submitted testimony analyzing the allegation of racial discrimination on the part of Wells Fargo Home Mortgage, Inc. and Norwest Mortgage, Inc.

2003: Working as a consulting expert to counsel for the class of purchasers of graphite electrodes, Dr. Hartman developed econometric models to assess the impact of alleged antitrust violations.

2003: Working as a consulting expert for counsel to the class of direct purchasers, Dr. Hartman reviewed materials in a matter regarding antitrust allegations concerning the manufacture and sale of microcrystalline cellulose in the United States.

2003: Working as a consulting expert to counsel for a large electrical generation company, Dr. Hartman developed economic and econometric models to analyze the allegation that this electrical generation company participated in a conspiracy to manipulate prices of power sold in California.

2003: Working as the testifying expert, Dr. Hartman submitted testimony which analyzed and calculated the economic impacts and damages to the U.S. growers and quota holders of flue-cured and burley tobacco leaf caused by a price-fixing conspiracy among the major U.S. tobacco leaf buyers and cigarette manufacturers.

2004: Working as the consulting expert for the United States Department of Justice, Dr. Hartman critically analyzed the calculation of the economic damages borne by an electric power generation utility as a result of the breach of the Standard Contract with the U.S. Department of Energy to remove spent nuclear fuel in 1998. Dr. Hartman's analysis included a critical review and rebuttal of the models and data put forward by the utility's experts in the calculation of damages; the development and presentation of alternative and improved models and corrected data to more accurately calculate damages; a critical review of econometric analyses put forward by one of the utility's experts; and a review of the economics of re-licensing existing nuclear generating facilities.

2004: Working as the testifying expert, Dr. Hartman submitted testimony in support of the certification of the class of purchasers of electrical carbon products who have been alleged to have been impacted and injured economically as a result of a price-fixing customer-allocation conspiracy of the major suppliers of such products in the United States.

2004-Present: Working as the testifying expert, Dr. Hartman submitted testimony in support of the certification of the class of end payer purchasers of those pharmaceutical products produced by AstraZeneca, the Bristol Myers Squibb Group, the Johnson and Johnson Group, the Glaxo-Smith-Kline Group and the Schering Plough Group that were subject to an alleged scheme to fraudulently inflate their Average Wholesale Price (AWP), thereby fraudulently inflating the reimbursement rates paid by the Class members for those pharmaceuticals when their reimbursement rates were formulaically related to the AWP. Dr. Hartman is consulting on related litigation undertaken by the Offices of the Attorneys General for the States of New York, Connecticut, Arizona, Nevada, Montana and Pennsylvania. He has also submitted testimony establishing liability and calculating damages for those Classes certified by the MDL Court and those States seeking remedy.

2004-2005: Working as a consulting expert to counsel for a major electricity and gas utility holding company, Dr. Hartman developed models to evaluate allegations of affiliate abuse by the regulated gas distribution entities and the trading entities of the holding company. The alleged abuses concerned spot and forward gas markets in California.



2005: Working as the testifying expert for the United States Department of Justice, Dr. Hartman developed models to critically analyze the cost submissions to the U.S. Court of Federal Claims by the TVA for monetary damages alleged to have resulted from partial breach by the U.S. Department of Energy of the Standard Contract to remove spent nuclear fuel from TVA beginning in 2002. Dr. Hartman's analysis included a critical review and rebuttal of the models, data and cost analyses put forward by the utility and the development and implementation of alternative and improved models and corrected data to more accurately calculate costs attributable to the alleged partial breach.

2005-2006: Working as a testifying expert, Dr. Hartman submitted testimony in support of the certification of the class of those self-funded welfare benefit plans (ERISA plans) impacted by the conduct of a major PBM in *In re Express Scripts, Inc., PBM Litigation, In the United States District Court for the Eastern District of Missouri, Eastern Division, MDL No. 1672, Master Case No. 4:05-md-01672-SNL*.

2005-2007: Working again as the testifying expert for the United States Department of Justice, Dr. Hartman developed models to critically analyze the cost submissions to the U.S. Court of Federal Claims by the Systems Fuel Inc., a subsidiary of Entergy, for monetary damages alleged to have resulted from partial breach by the U.S. Department of Energy of the Standard Contract to remove spent nuclear fuel from SFI facilities in Mississippi and Arkansas. Dr. Hartman's analysis has included a critical review and rebuttal of the SFI models, data and cost analyses put forward by the utilities and the development and implementation of alternative and improved models and corrected data to more accurately calculate costs attributable to the alleged partial breach.



**Attachment B**

**Attachment B.1: Comparison of Cigna and IMS Average Reimbursement**

Drug	Strength		JUL01	AUG01	SEP01	OCT01	NOV01	DEC01	JAN02	FEB02	MAR02	APR02
CELEBREX	200MG	CLAIMS DATA	\$2.16	\$2.16	\$2.16	\$2.16	\$2.24	\$2.36	\$2.36	\$2.35	\$2.35	\$2.35
		IMS DATA	\$2.42	\$2.42	\$2.42	\$2.42	\$2.51	\$2.63	\$2.65	\$2.64	\$2.64	\$2.64
		CLAIMS / IMS (%)	89%	89%	89%	89%	89%	90%	89%	89%	89%	89%
		IMS TO PRE JUMP PERIOD (JUMP=NOV 01) (%)					103%	108%	109%	109%	109%	109%
		CLAIMS TO PRE JUMP PERIOD (%)					104%	109%	109%	109%	109%	109%
LIPITOR	10MG	CLAIMS DATA	\$1.77	\$1.76	\$1.76	\$1.76	\$1.76	\$1.76	\$1.95	\$1.99	\$1.99	\$1.99
		IMS DATA	\$1.94	\$1.94	\$1.94	\$1.94	\$1.95	\$1.95	\$2.13	\$2.19	\$2.19	\$2.19
		CLAIMS / IMS (%)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)							110%	112%	113%	113%
		CLAIMS TO PRE JUMP PERIOD (%)							111%	113%	113%	113%
LIPITOR	20MG	CLAIMS DATA	\$2.70	\$2.70	\$2.70	\$2.70	\$2.70	\$2.70	\$2.85	\$2.89	\$2.88	\$2.88
		IMS DATA	\$2.96	\$2.96	\$2.96	\$2.96	\$2.96	\$2.96	\$3.12	\$3.16	\$3.16	\$3.16
		CLAIMS / IMS (%)	91%	91%	91%	91%	91%	91%	91%	91%	91%	91%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)							105%	107%	107%	107%
		CLAIMS TO PRE JUMP PERIOD (%)							106%	107%	107%	107%
NEURONTIN	300MG	CLAIMS DATA	\$1.03	\$1.03	\$1.03	\$1.03	\$1.03	\$1.03	\$1.08	\$1.10	\$1.10	\$1.10
		IMS DATA	\$1.15	\$1.15	\$1.15	\$1.15	\$1.15	\$1.15	\$1.21	\$1.22	\$1.23	\$1.22
		CLAIMS / IMS (%)	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)							105%	107%	107%	107%
		CLAIMS TO PRE JUMP PERIOD (%)							106%	107%	107%	107%
PLAVIX	75MG	CLAIMS DATA	\$2.90	\$2.95	\$3.05	\$3.05	\$3.05	\$3.05	\$3.29	\$3.36	\$3.36	\$3.36
		IMS DATA	\$3.22	\$3.29	\$3.39	\$3.38	\$3.39	\$3.39	\$3.63	\$3.74	\$3.75	\$3.74
		CLAIMS / IMS (%)	90%	90%	90%	90%	90%	90%	91%	90%	90%	90%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)							107%	110%	110%	110%
		CLAIMS TO PRE JUMP PERIOD (%)							108%	110%	110%	110%
PREVACID	30MG	CLAIMS DATA	\$3.52	\$3.52	\$3.52	\$3.51	\$3.51	\$3.51	\$3.68	\$3.73	\$3.73	\$3.72
		IMS DATA	\$3.91	\$3.91	\$3.91	\$3.91	\$3.91	\$3.91	\$4.11	\$4.19	\$4.20	\$4.20
		CLAIMS / IMS (%)	90%	90%	90%	90%	90%	90%	90%	89%	89%	89%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)							105%	107%	107%	107%
		CLAIMS TO PRE JUMP PERIOD (%)							105%	106%	106%	106%
PRILOSEC	20MG	CLAIMS DATA	\$3.68	\$3.68	\$3.68	\$3.68	\$3.68	\$3.68	\$3.82	\$3.93	\$3.93	\$3.93
		IMS DATA	\$4.01	\$4.01	\$4.01	\$4.01	\$4.01	\$4.02	\$4.19	\$4.29	\$4.29	\$4.29
		CLAIMS / IMS (%)	92%	92%	92%	92%	92%	92%	91%	92%	92%	92%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)							104%	107%	107%	107%
		CLAIMS TO PRE JUMP PERIOD (%)							104%	107%	107%	107%
WELLBUTRIN SR	150MG	CLAIMS DATA	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.45	\$1.52	\$1.57	\$1.57	\$1.57
		IMS DATA	\$1.62	\$1.62	\$1.62	\$1.62	\$1.62	\$1.62	\$1.70	\$1.76	\$1.76	\$1.75
		CLAIMS / IMS (%)	90%	90%	90%	90%	90%	90%	89%	90%	90%	90%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)							105%	109%	108%	108%
		CLAIMS TO PRE JUMP PERIOD (%)							105%	108%	108%	108%

**Attachment B.1: Comparison of Cigna and IMS Average Reimbursement**

Drug	Strength		MAY02	JUN02	JUL02	AUG02	SEP02	OCT02	NOV02	DEC02	JAN03	FEB03	MAR03	APR03
CELEBREX	200MG	CLAIMS DATA	\$2.35	\$2.35	\$2.35	\$2.35	\$2.35	\$2.35	\$2.40	\$2.45	\$2.45	\$2.45	\$2.45	\$2.45
		IMS DATA	\$2.64	\$2.64	\$2.65	\$2.65	\$2.65	\$2.65	\$2.69	\$2.76	\$2.77	\$2.77	\$2.77	\$2.76
		CLAIMS / IMS (%)	89%	89%	89%	89%	89%	89%	89%	88%	88%	88%	88%	89%
		IMS TO PRE JUMP PERIOD (JUMP=NOV 01) (%)	109%	109%	109%	109%	109%	109%	111%	114%	114%	114%	114%	114%
		CLAIMS TO PRE JUMP PERIOD (%)	109%	109%	109%	109%	109%	108%	111%	113%	113%	113%	113%	113%
LIPITOR	10MG	CLAIMS DATA	\$1.99	\$1.99	\$1.99	\$1.99	\$1.99	\$1.99	\$1.99	\$1.99	\$2.04	\$2.04	\$2.04	\$2.04
		IMS DATA	\$2.19	\$2.20	\$2.20	\$2.20	\$2.20	\$2.20	\$2.20	\$2.20	\$2.27	\$2.27	\$2.27	\$2.27
		CLAIMS / IMS (%)	91%	91%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	113%	113%	113%	113%	113%	113%	113%	113%	116%	117%	117%	116%
		CLAIMS TO PRE JUMP PERIOD (%)	113%	113%	113%	113%	113%	113%	113%	113%	116%	116%	116%	116%
LIPITOR	20MG	CLAIMS DATA	\$2.88	\$2.88	\$2.93	\$2.94	\$2.94	\$2.94	\$2.94	\$2.94	\$3.09	\$3.10	\$3.10	\$3.09
		IMS DATA	\$3.16	\$3.17	\$3.22	\$3.23	\$3.23	\$3.23	\$3.23	\$3.24	\$3.39	\$3.42	\$3.42	\$3.42
		CLAIMS / IMS (%)	91%	91%	91%	91%	91%	91%	91%	91%	90%	90%	90%	90%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	107%	107%	109%	109%	109%	109%	109%	109%	115%	116%	116%	116%
		CLAIMS TO PRE JUMP PERIOD (%)	107%	107%	109%	109%	109%	109%	109%	109%	114%	115%	115%	115%
NEURONTIN	300MG	CLAIMS DATA	\$1.10	\$1.10	\$1.13	\$1.13	\$1.13	\$1.13	\$1.13	\$1.13	\$1.18	\$1.18	\$1.18	\$1.18
		IMS DATA	\$1.23	\$1.23	\$1.25	\$1.27	\$1.26	\$1.26	\$1.26	\$1.27	\$1.32	\$1.33	\$1.33	\$1.33
		CLAIMS / IMS (%)	89%	89%	90%	89%	89%	89%	89%	89%	90%	89%	89%	89%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	107%	107%	109%	110%	110%	110%	110%	110%	115%	116%	116%	116%
		CLAIMS TO PRE JUMP PERIOD (%)	107%	107%	110%	110%	110%	110%	110%	110%	115%	115%	115%	115%
PLAVIX	75MG	CLAIMS DATA	\$3.36	\$3.36	\$3.36	\$3.36	\$3.36	\$3.35	\$3.36	\$3.35	\$3.56	\$3.57	\$3.57	\$3.57
		IMS DATA	\$3.75	\$3.76	\$3.75	\$3.76	\$3.76	\$3.76	\$3.76	\$3.76	\$3.96	\$4.01	\$4.01	\$4.01
		CLAIMS / IMS (%)	89%	89%	89%	89%	89%	89%	89%	89%	90%	89%	89%	89%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	111%	111%	111%	111%	111%	111%	111%	111%	117%	118%	118%	118%
		CLAIMS TO PRE JUMP PERIOD (%)	110%	110%	110%	110%	110%	110%	110%	110%	117%	117%	117%	117%
PREVACID	30MG	CLAIMS DATA	\$3.72	\$3.72	\$3.73	\$3.72	\$3.72	\$3.72	\$3.72	\$3.83	\$3.88	\$3.89	\$3.89	\$3.89
		IMS DATA	\$4.21	\$4.21	\$4.21	\$4.22	\$4.22	\$4.21	\$4.22	\$4.33	\$4.39	\$4.37	\$4.37	\$4.37
		CLAIMS / IMS (%)	88%	88%	88%	88%	88%	88%	88%	89%	88%	89%	89%	89%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	108%	108%	108%	108%	108%	108%	108%	111%	112%	112%	112%	112%
		CLAIMS TO PRE JUMP PERIOD (%)	106%	106%	106%	106%	106%	106%	106%	109%	110%	111%	111%	111%
PRILOSEC	20MG	CLAIMS DATA	\$3.93	\$3.93	\$3.93	\$3.93	\$3.93	\$3.93	\$3.93	\$3.91	\$3.90	\$3.90	\$3.90	\$3.90
		IMS DATA	\$4.29	\$4.30	\$4.30	\$4.31	\$4.31	\$4.30	\$4.30	\$4.28	\$4.29	\$4.27	\$4.27	\$4.27
		CLAIMS / IMS (%)	92%	91%	91%	91%	91%	91%	91%	92%	91%	91%	91%	91%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	107%	107%	107%	107%	107%	107%	107%	106%	107%	106%	106%	106%
		CLAIMS TO PRE JUMP PERIOD (%)	107%	107%	107%	107%	107%	107%	107%	106%	106%	106%	106%	106%
WELLBUTRIN SR	150MG	CLAIMS DATA	\$1.57	\$1.62	\$1.64	\$1.64	\$1.64	\$1.64	\$1.64	\$1.64	\$1.64	\$1.71	\$1.72	\$1.72
		IMS DATA	\$1.76	\$1.79	\$1.83	\$1.84	\$1.84	\$1.83	\$1.84	\$1.83	\$1.85	\$1.92	\$1.92	\$1.92
		CLAIMS / IMS (%)	90%	90%	90%	89%	89%	89%	89%	90%	89%	89%	90%	90%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	109%	111%	113%	114%	113%	113%	113%	113%	114%	118%	119%	119%
		CLAIMS TO PRE JUMP PERIOD (%)	108%	111%	113%	113%	113%	113%	113%	113%	113%	118%	119%	119%

**Attachment B.1: Comparison of Cigna and IMS Average Reimbursement**

Drug	Strength		MAY03	JUN03	JUL03	AUG03	SEP03	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04
CELEBREX	200MG	CLAIMS DATA	\$2.45	\$2.44	\$2.49	\$2.52	\$2.51	\$2.51	\$2.51	\$2.51	\$2.60	\$2.63	\$2.62	\$2.62
		IMS DATA	\$2.77	\$2.76	\$2.80	\$2.84	\$2.84	\$2.85	\$2.86	\$2.85	\$2.96	\$3.00	\$3.00	\$3.00
		CLAIMS / IMS (%)	88%	88%	89%	88%	88%	88%	88%	88%	88%	88%	87%	87%
		IMS TO PRE JUMP PERIOD (JUMP=NOV 01) (%)	114%	114%	116%	117%	117%	117%	118%	118%	122%	124%	124%	124%
		CLAIMS TO PRE JUMP PERIOD (%)	113%	113%	115%	116%	116%	116%	116%	116%	120%	121%	121%	121%
LIPITOR	10MG	CLAIMS DATA	\$2.04	\$2.04	\$2.08	\$2.11	\$2.11	\$2.11	\$2.11	\$2.10	\$2.17	\$2.19	\$2.19	\$2.19
		IMS DATA	\$2.27	\$2.27	\$2.31	\$2.34	\$2.34	\$2.34	\$2.36	\$2.36	\$2.45	\$2.47	\$2.47	\$2.47
		CLAIMS / IMS (%)	90%	90%	90%	90%	90%	90%	89%	89%	89%	89%	89%	89%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	116%	117%	119%	120%	120%	120%	121%	121%	126%	127%	127%	127%
		CLAIMS TO PRE JUMP PERIOD (%)	116%	116%	118%	120%	120%	119%	119%	119%	123%	124%	124%	124%
LIPITOR	20MG	CLAIMS DATA	\$3.09	\$3.09	\$3.09	\$3.09	\$3.09	\$3.09	\$3.09	\$3.08	\$3.14	\$3.16	\$3.16	\$3.16
		IMS DATA	\$3.42	\$3.42	\$3.42	\$3.42	\$3.42	\$3.42	\$3.44	\$3.44	\$3.53	\$3.54	\$3.54	\$3.54
		CLAIMS / IMS (%)	90%	90%	90%	90%	90%	90%	90%	90%	89%	89%	89%	89%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	116%	116%	116%	115%	116%	116%	116%	116%	119%	119%	120%	120%
		CLAIMS TO PRE JUMP PERIOD (%)	115%	115%	114%	115%	114%	114%	114%	114%	116%	117%	117%	117%
NEURONTIN	300MG	CLAIMS DATA	\$1.18	\$1.18	\$1.18	\$1.18	\$1.18	\$1.18	\$1.18	\$1.18	\$1.23	\$1.25	\$1.25	\$1.25
		IMS DATA	\$1.33	\$1.33	\$1.33	\$1.33	\$1.33	\$1.33	\$1.33	\$1.33	\$1.39	\$1.41	\$1.41	\$1.41
		CLAIMS / IMS (%)	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	89%	88%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	116%	116%	116%	116%	116%	116%	116%	116%	121%	123%	123%	123%
		CLAIMS TO PRE JUMP PERIOD (%)	115%	115%	115%	115%	115%	115%	115%	115%	120%	122%	122%	122%
PLAVIX	75MG	CLAIMS DATA	\$3.57	\$3.57	\$3.57	\$3.57	\$3.57	\$3.56	\$3.57	\$3.56	\$3.77	\$3.84	\$3.83	\$3.83
		IMS DATA	\$4.01	\$4.01	\$4.00	\$4.00	\$4.00	\$4.00	\$4.04	\$4.04	\$4.24	\$4.33	\$4.34	\$4.34
		CLAIMS / IMS (%)	89%	89%	89%	89%	89%	89%	88%	88%	89%	89%	88%	88%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	118%	118%	118%	118%	118%	118%	119%	119%	125%	128%	128%	128%
		CLAIMS TO PRE JUMP PERIOD (%)	117%	117%	117%	117%	117%	117%	117%	117%	124%	126%	126%	126%
PREVACID	30MG	CLAIMS DATA	\$3.89	\$3.97	\$4.04	\$4.05	\$4.02	\$4.03	\$4.03	\$4.03	\$4.00	\$3.99	\$3.99	\$4.02
		IMS DATA	\$4.38	\$4.44	\$4.50	\$4.50	\$4.50	\$4.50	\$4.51	\$4.50	\$4.54	\$4.51	\$4.51	\$4.54
		CLAIMS / IMS (%)	89%	90%	90%	90%	89%	90%	90%	89%	88%	88%	88%	89%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	112%	113%	115%	115%	115%	115%	115%	115%	116%	115%	115%	116%
		CLAIMS TO PRE JUMP PERIOD (%)	111%	113%	115%	115%	115%	115%	115%	115%	114%	114%	114%	115%
PRILOSEC	20MG	CLAIMS DATA	\$3.91	\$3.91	\$3.91	\$3.91	\$3.91	\$3.90	\$3.90	\$3.90	\$3.89	\$3.88	\$3.88	\$3.88
		IMS DATA	\$4.28	\$4.26	\$4.29	\$4.27	\$4.25	\$4.27	\$4.24	\$4.20	\$4.20	\$4.21	\$4.20	\$4.26
		CLAIMS / IMS (%)	91%	92%	91%	92%	92%	91%	92%	93%	93%	92%	92%	91%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	106%	106%	107%	106%	106%	106%	106%	105%	105%	105%	105%	106%
		CLAIMS TO PRE JUMP PERIOD (%)	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%
WELLBUTRIN SR	150MG	CLAIMS DATA	\$1.72	\$1.72	\$1.72	\$1.72	\$1.72	\$1.72	\$1.72	\$1.77	\$1.83	\$1.83	\$1.83	\$1.83
		IMS DATA	\$1.92	\$1.92	\$1.92	\$1.92	\$1.92	\$1.92	\$1.92	\$1.99	\$2.06	\$2.05	\$2.04	\$2.02
		CLAIMS / IMS (%)	90%	90%	89%	90%	89%	90%	89%	89%	89%	89%	89%	91%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	119%	119%	119%	119%	119%	119%	119%	123%	128%	127%	126%	125%
		CLAIMS TO PRE JUMP PERIOD (%)	119%	118%	118%	118%	118%	118%	118%	122%	126%	126%	126%	126%

**Attachment B.2: Comparison of GE and IMS Average Reimbursement**

Drug	Strength		JUL01	AUG01	SEP01	OCT01	NOV01	DEC01	JAN02	FEB02	MAR02	APR02
CELEBREX	200MG	CLAIMS DATA	\$2.25	\$2.25	\$2.26	\$2.25	\$2.24	\$2.46	\$2.46	\$2.45	\$2.45	\$2.47
		IMS DATA	\$2.42	\$2.42	\$2.42	\$2.42	\$2.51	\$2.63	\$2.65	\$2.64	\$2.64	\$2.64
		CLAIMS / IMS (%)	93%	93%	93%	93%	89%	94%	93%	93%	93%	93%
		IMS TO PRE JUMP PERIOD (JUMP=NOV 01) (%)					103%	108%	109%	109%	109%	109%
		CLAIMS TO PRE JUMP PERIOD (%)					100%	109%	109%	109%	109%	110%
LIPITOR	10MG	CLAIMS DATA	\$1.85	\$1.84	\$1.85	\$1.84	\$1.84	\$1.84	\$2.05	\$2.08	\$2.08	\$2.08
		IMS DATA	\$1.94	\$1.94	\$1.94	\$1.94	\$1.95	\$1.95	\$2.13	\$2.19	\$2.19	\$2.19
		CLAIMS / IMS (%)	95%	95%	95%	95%	95%	95%	96%	95%	95%	95%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)							110%	112%	113%	113%
		CLAIMS TO PRE JUMP PERIOD (%)							111%	113%	113%	113%
LIPITOR	20MG	CLAIMS DATA	\$2.92	\$2.86	\$2.81	\$2.81	\$2.89	\$2.85	\$3.02	\$3.10	\$3.01	\$3.01
		IMS DATA	\$2.96	\$2.96	\$2.96	\$2.96	\$2.96	\$2.96	\$3.12	\$3.16	\$3.16	\$3.16
		CLAIMS / IMS (%)	99%	97%	95%	95%	98%	96%	97%	98%	95%	95%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)							105%	107%	107%	107%
		CLAIMS TO PRE JUMP PERIOD (%)							106%	109%	106%	106%
NEURONTIN	300MG	CLAIMS DATA	\$1.02	\$1.07	\$1.07	\$1.07	\$1.07	\$1.07	\$1.14	\$1.15	\$1.08	\$1.14
		IMS DATA	\$1.15	\$1.15	\$1.15	\$1.15	\$1.15	\$1.15	\$1.21	\$1.22	\$1.23	\$1.22
		CLAIMS / IMS (%)	89%	93%	93%	93%	93%	94%	95%	94%	88%	93%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)							105%	107%	107%	107%
		CLAIMS TO PRE JUMP PERIOD (%)							106%	107%	100%	106%
PLAVIX	75MG	CLAIMS DATA	\$3.04	\$3.14	\$3.20	\$3.19	\$3.19	\$3.19	\$3.51	\$3.53	\$3.53	\$3.52
		IMS DATA	\$3.22	\$3.29	\$3.39	\$3.38	\$3.39	\$3.39	\$3.63	\$3.74	\$3.75	\$3.74
		CLAIMS / IMS (%)	95%	95%	94%	94%	94%	94%	97%	94%	94%	94%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)							107%	110%	110%	110%
		CLAIMS TO PRE JUMP PERIOD (%)							110%	111%	111%	110%
PREVACID	30MG	CLAIMS DATA	\$3.70	\$3.70	\$3.69	\$3.70	\$3.69	\$3.71	\$3.87	\$3.95	\$3.95	\$3.94
		IMS DATA	\$3.91	\$3.91	\$3.91	\$3.91	\$3.91	\$3.91	\$4.11	\$4.19	\$4.20	\$4.20
		CLAIMS / IMS (%)	95%	95%	94%	95%	94%	95%	94%	94%	94%	94%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)							105%	107%	107%	107%
		CLAIMS TO PRE JUMP PERIOD (%)							104%	107%	106%	106%
PRILOSEC	20MG	CLAIMS DATA	\$3.81	\$3.81	\$3.56	\$3.54	\$3.51	\$3.82	\$3.99	\$4.12	\$4.09	\$4.09
		IMS DATA	\$4.01	\$4.01	\$4.01	\$4.01	\$4.01	\$4.02	\$4.19	\$4.29	\$4.29	\$4.29
		CLAIMS / IMS (%)	95%	95%	89%	88%	88%	95%	95%	96%	95%	95%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)							104%	107%	107%	107%
		CLAIMS TO PRE JUMP PERIOD (%)							104%	108%	107%	107%
WELLBUTRIN SR	150MG	CLAIMS DATA	\$1.51	\$1.52	\$1.51	\$1.51	\$1.50	\$1.52	\$1.61	\$1.68	\$1.63	\$1.64
		IMS DATA	\$1.62	\$1.62	\$1.62	\$1.62	\$1.62	\$1.62	\$1.70	\$1.76	\$1.76	\$1.75
		CLAIMS / IMS (%)	93%	94%	93%	93%	93%	94%	95%	96%	93%	93%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)							105%	109%	108%	108%
		CLAIMS TO PRE JUMP PERIOD (%)							106%	111%	107%	107%

## Attachment B.2: Comparison of GE and IMS Average Reimbursement

Drug	Strength		MAY02	JUN02	JUL02	AUG02	SEP02	OCT02	NOV02	DEC02	JAN03	FEB03	MAR03	APR03
CELEBREX	200MG	CLAIMS DATA	\$2.46	\$2.46	\$2.46	\$2.46	\$2.46	\$2.46	\$2.51	\$2.57	\$2.55	\$2.56	\$2.56	\$2.57
		IMS DATA	\$2.64	\$2.64	\$2.65	\$2.65	\$2.65	\$2.65	\$2.69	\$2.76	\$2.77	\$2.77	\$2.77	\$2.76
		CLAIMS / IMS (%)	93%	93%	93%	93%	93%	93%	93%	93%	92%	92%	92%	93%
		IMS TO PRE JUMP PERIOD (JUMP=NOV 01) (%)	109%	109%	109%	109%	109%	109%	111%	114%	114%	114%	114%	114%
		CLAIMS TO PRE JUMP PERIOD (%)	110%	109%	110%	109%	110%	109%	112%	114%	114%	114%	114%	114%
LIPITOR	10MG	CLAIMS DATA	\$2.08	\$2.08	\$2.08	\$2.09	\$2.08	\$2.09	\$2.08	\$2.04	\$2.13	\$2.15	\$2.14	\$2.14
		IMS DATA	\$2.19	\$2.20	\$2.20	\$2.20	\$2.20	\$2.20	\$2.20	\$2.20	\$2.27	\$2.27	\$2.27	\$2.27
		CLAIMS / IMS (%)	95%	95%	95%	95%	95%	95%	95%	93%	94%	95%	94%	94%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	113%	113%	113%	113%	113%	113%	113%	113%	116%	117%	117%	116%
		CLAIMS TO PRE JUMP PERIOD (%)	113%	113%	113%	113%	113%	113%	113%	111%	116%	117%	116%	116%
LIPITOR	20MG	CLAIMS DATA	\$3.02	\$3.05	\$3.06	\$3.07	\$3.11	\$3.11	\$3.06	\$3.10	\$3.21	\$3.24	\$3.30	\$3.24
		IMS DATA	\$3.16	\$3.17	\$3.22	\$3.23	\$3.23	\$3.23	\$3.23	\$3.24	\$3.39	\$3.42	\$3.42	\$3.42
		CLAIMS / IMS (%)	95%	96%	95%	95%	96%	96%	95%	96%	94%	95%	96%	95%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	107%	107%	109%	109%	109%	109%	109%	109%	115%	116%	116%	116%
		CLAIMS TO PRE JUMP PERIOD (%)	106%	107%	108%	108%	109%	109%	108%	109%	113%	114%	116%	114%
NEURONTIN	300MG	CLAIMS DATA	\$1.15	\$1.14	\$1.17	\$1.18	\$1.18	\$1.18	\$1.18	\$1.18	\$1.23	\$1.24	\$1.23	\$1.23
		IMS DATA	\$1.23	\$1.23	\$1.25	\$1.27	\$1.26	\$1.26	\$1.26	\$1.27	\$1.32	\$1.33	\$1.33	\$1.33
		CLAIMS / IMS (%)	93%	93%	93%	93%	93%	93%	93%	93%	94%	93%	93%	93%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	107%	107%	109%	110%	110%	110%	110%	110%	115%	116%	116%	116%
		CLAIMS TO PRE JUMP PERIOD (%)	107%	106%	109%	110%	110%	110%	110%	110%	115%	115%	115%	115%
PLAVIX	75MG	CLAIMS DATA	\$3.52	\$3.52	\$3.52	\$3.52	\$3.51	\$3.52	\$3.52	\$3.50	\$3.72	\$3.75	\$3.75	\$3.74
		IMS DATA	\$3.75	\$3.76	\$3.75	\$3.76	\$3.76	\$3.76	\$3.76	\$3.76	\$3.96	\$4.01	\$4.01	\$4.01
		CLAIMS / IMS (%)	94%	94%	94%	93%	93%	94%	93%	93%	94%	93%	93%	93%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	111%	111%	111%	111%	111%	111%	111%	111%	117%	118%	118%	118%
		CLAIMS TO PRE JUMP PERIOD (%)	110%	110%	110%	110%	110%	110%	110%	110%	117%	118%	118%	117%
PREVACID	30MG	CLAIMS DATA	\$3.94	\$3.95	\$3.94	\$3.94	\$3.94	\$3.94	\$3.94	\$4.09	\$4.09	\$4.09	\$4.09	\$4.09
		IMS DATA	\$4.21	\$4.21	\$4.21	\$4.22	\$4.22	\$4.21	\$4.22	\$4.33	\$4.39	\$4.37	\$4.37	\$4.37
		CLAIMS / IMS (%)	94%	94%	94%	93%	93%	94%	93%	94%	93%	93%	93%	94%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	108%	108%	108%	108%	108%	108%	108%	111%	112%	112%	112%	112%
		CLAIMS TO PRE JUMP PERIOD (%)	106%	106%	106%	106%	106%	106%	106%	110%	110%	110%	110%	110%
PRILOSEC	20MG	CLAIMS DATA	\$4.09	\$4.09	\$4.09	\$4.09	\$4.11	\$4.09	\$4.09	\$4.08	\$4.08	\$4.08	\$2.92	\$2.90
		IMS DATA	\$4.29	\$4.30	\$4.30	\$4.31	\$4.31	\$4.30	\$4.30	\$4.28	\$4.29	\$4.27	\$4.27	\$4.27
		CLAIMS / IMS (%)	95%	95%	95%	95%	96%	95%	95%	96%	95%	96%	68%	68%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	107%	107%	107%	107%	107%	107%	107%	106%	107%	106%	106%	106%
		CLAIMS TO PRE JUMP PERIOD (%)	107%	107%	107%	107%	108%	107%	107%	107%	107%	107%	76%	76%
WELLBUTRIN SR	150MG	CLAIMS DATA	\$1.65	\$1.69	\$1.73	\$1.71	\$1.71	\$1.71	\$1.73	\$1.70	\$1.71	\$1.78	\$1.79	\$1.78
		IMS DATA	\$1.76	\$1.79	\$1.83	\$1.84	\$1.84	\$1.83	\$1.84	\$1.83	\$1.85	\$1.92	\$1.92	\$1.92
		CLAIMS / IMS (%)	94%	94%	94%	93%	93%	93%	94%	93%	93%	93%	93%	93%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	109%	111%	113%	114%	113%	113%	113%	113%	114%	118%	119%	119%
		CLAIMS TO PRE JUMP PERIOD (%)	109%	111%	114%	112%	112%	112%	113%	111%	113%	117%	117%	117%

## Attachment B.2: Comparison of GE and IMS Average Reimbursement

Drug	Strength		MAY03	JUN03	JUL03	AUG03	SEP03	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04
CELEBREX	200MG	CLAIMS DATA	\$2.55	\$2.56	\$2.57	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.70	\$2.73	\$2.73	\$2.73
		IMS DATA	\$2.77	\$2.76	\$2.80	\$2.84	\$2.84	\$2.85	\$2.86	\$2.85	\$2.96	\$3.00	\$3.00	\$3.00
		CLAIMS / IMS (%)	92%	93%	92%	91%	91%	92%	91%	91%	91%	91%	91%	91%
		IMS TO PRE JUMP PERIOD (JUMP=NOV 01) (%)	114%	114%	116%	117%	117%	117%	118%	118%	122%	124%	124%	124%
		CLAIMS TO PRE JUMP PERIOD (%)	114%	114%	114%	116%	116%	116%	116%	116%	120%	121%	121%	121%
LIPITOR	10MG	CLAIMS DATA	\$2.15	\$2.15	\$2.16	\$2.19	\$2.19	\$2.19	\$2.20	\$2.20	\$2.27	\$2.29	\$2.29	\$2.29
		IMS DATA	\$2.27	\$2.27	\$2.31	\$2.34	\$2.34	\$2.34	\$2.36	\$2.36	\$2.45	\$2.47	\$2.47	\$2.47
		CLAIMS / IMS (%)	95%	95%	94%	94%	94%	94%	93%	93%	93%	93%	93%	93%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	116%	117%	119%	120%	120%	120%	121%	121%	126%	127%	127%	127%
		CLAIMS TO PRE JUMP PERIOD (%)	117%	116%	117%	119%	119%	119%	119%	119%	123%	124%	124%	124%
LIPITOR	20MG	CLAIMS DATA	\$3.24	\$3.24	\$3.20	\$3.22	\$3.20	\$3.20	\$3.20	\$3.20	\$3.27	\$3.29	\$3.29	\$3.29
		IMS DATA	\$3.42	\$3.42	\$3.42	\$3.42	\$3.42	\$3.42	\$3.44	\$3.44	\$3.53	\$3.54	\$3.54	\$3.54
		CLAIMS / IMS (%)	95%	95%	93%	94%	94%	93%	93%	93%	93%	93%	93%	93%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	116%	116%	116%	115%	116%	116%	116%	116%	119%	119%	120%	120%
		CLAIMS TO PRE JUMP PERIOD (%)	114%	114%	112%	113%	112%	112%	112%	112%	115%	115%	115%	116%
NEURONTIN	300MG	CLAIMS DATA	\$1.23	\$1.23	\$1.22	\$1.21	\$1.22	\$1.22	\$1.22	\$1.22	\$1.28	\$1.30	\$1.30	\$1.29
		IMS DATA	\$1.33	\$1.33	\$1.33	\$1.33	\$1.33	\$1.33	\$1.33	\$1.33	\$1.39	\$1.41	\$1.41	\$1.41
		CLAIMS / IMS (%)	93%	93%	92%	91%	92%	92%	91%	91%	92%	92%	92%	92%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	116%	116%	116%	116%	116%	116%	116%	116%	121%	123%	123%	123%
		CLAIMS TO PRE JUMP PERIOD (%)	115%	115%	113%	113%	114%	113%	113%	113%	119%	121%	121%	121%
PLAVIX	75MG	CLAIMS DATA	\$3.74	\$3.74	\$3.70	\$3.70	\$3.70	\$3.70	\$3.69	\$3.69	\$3.93	\$3.98	\$3.98	\$3.98
		IMS DATA	\$4.01	\$4.01	\$4.00	\$4.00	\$4.00	\$4.00	\$4.04	\$4.04	\$4.24	\$4.33	\$4.34	\$4.34
		CLAIMS / IMS (%)	93%	93%	92%	92%	92%	92%	91%	91%	93%	92%	92%	92%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	118%	118%	118%	118%	118%	118%	119%	119%	125%	128%	128%	128%
		CLAIMS TO PRE JUMP PERIOD (%)	117%	117%	116%	116%	116%	116%	116%	116%	123%	125%	125%	125%
PREVACID	30MG	CLAIMS DATA	\$4.09	\$4.16	\$4.16	\$4.16	\$4.16	\$4.16	\$4.16	\$4.16	\$4.16	\$4.17	\$4.16	\$4.21
		IMS DATA	\$4.38	\$4.44	\$4.50	\$4.50	\$4.50	\$4.50	\$4.51	\$4.50	\$4.54	\$4.51	\$4.51	\$4.54
		CLAIMS / IMS (%)	93%	94%	92%	92%	92%	93%	92%	92%	92%	92%	92%	93%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	112%	113%	115%	115%	115%	115%	115%	115%	116%	115%	115%	116%
		CLAIMS TO PRE JUMP PERIOD (%)	110%	112%	112%	112%	112%	112%	112%	112%	112%	112%	112%	113%
PRILOSEC	20MG	CLAIMS DATA	\$4.07	\$4.07	\$4.04	\$5.16	\$4.05	\$4.05	\$4.05	\$4.05	\$4.05	\$4.05	\$4.05	\$4.06
		IMS DATA	\$4.28	\$4.26	\$4.29	\$4.27	\$4.25	\$4.27	\$4.24	\$4.20	\$4.20	\$4.21	\$4.20	\$4.26
		CLAIMS / IMS (%)	95%	96%	94%	121%	95%	95%	95%	96%	96%	96%	96%	95%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	106%	106%	107%	106%	106%	106%	106%	105%	105%	105%	105%	106%
		CLAIMS TO PRE JUMP PERIOD (%)	107%	107%	106%	135%	106%	106%	106%	106%	106%	106%	106%	106%
WELLBUTRIN SR	150MG	CLAIMS DATA	\$1.79	\$1.79	\$1.79	\$1.81	\$1.77	\$1.77	\$1.77	\$1.85	\$1.89	\$1.89	\$1.89	\$1.90
		IMS DATA	\$1.92	\$1.92	\$1.92	\$1.92	\$1.92	\$1.92	\$1.92	\$1.99	\$2.06	\$2.05	\$2.04	\$2.02
		CLAIMS / IMS (%)	93%	93%	93%	94%	92%	92%	92%	93%	92%	92%	93%	94%
		IMS TO PRE JUMP PERIOD (JUMP=JAN 02) (%)	119%	119%	119%	119%	119%	119%	119%	123%	128%	127%	126%	125%
		CLAIMS TO PRE JUMP PERIOD (%)	117%	117%	118%	119%	116%	116%	116%	122%	124%	124%	124%	125%



## **Attachment B.3: Description of Data Analysis**

### **General**

1. Attachments B.1 and B.2 present comparisons of average reimbursement calculated from IMS data ("IMS DATA") relative to average reimbursement calculated from Cigna and GE claims in Attachments B.1 and B.2 respectively ("CLAIMS DATA").
2. Attachments B.1 and B.2 summarize reimbursement for the following drug/strength pairs:
  - a. CELEBREX 200MG
  - b. LIPITOR 10MG
  - c. LIPITOR 20MG
  - d. NEURONTIN 300MG
  - e. PLAVIX 75MG
  - f. PREVACID 30MG
  - g. PRILOSEC 20MG
  - h. WELLBUTRIN SR 150MG
3. In both attachments, claims reimbursement is compared to IMS reimbursement on a percentage basis as  $\text{CLAIMS DATA} / \text{IMS DATA}$  by month by drug/strength.
4. In both attachments, each month of IMS data during and after the "jump period" is compared to the month before the jump period as  $\text{IMS DATA}(\text{current}) / \text{IMS DATA}(\text{pre-jump})$ .
5. In both attachments, each month of claims data during and after the "jump period" is compared to the month before the jump period as  $\text{CLAIMS DATA}(\text{current}) / \text{CLAIMS DATA}(\text{pre-jump})$ .
6. Values calculated from the tables may differ slightly from actual values due to rounding.

## IMS Data

1. Source: Combined\_IMS\_AWP\_WAC\_filtered

This data set was generated by SAS programs produced to Defendants in September, 2007.

2. The data were limited to the period July 2001 to November 2004 and filtered to the following subset of Drug/Strengths:
  - a. CELEBREX 200MG
  - b. LIPITOR 10MG
  - c. LIPITOR 20MG
  - d. NEURONTIN 300MG
  - e. PLAVIX 75MG
  - f. PREVACID 30MG
  - g. PRILOSEC 20MG
  - h. WELLBUTRIN SR 150MG

3. Average Reimbursement was calculated by Drug/Strength and Month as:

Transaction Price = Dollars/Extended Units

## Cigna Data

1. Source: Claims Data produced by CIGNA.
2. The raw data were filtered to the following subset of NDCs:
  - 00025152531
  - 00025152534
  - 00025152551
  - 00071015523
  - 00071015534
  - 00071015540
  - 00071015623
  - 00071015640
  - 00071080524
  - 00071080540
  - 00173013555
  - 00186074228
  - 00186074231
  - 00186074282
  - 00300304611
  - 00300304613
  - 00300304619
  - 00300731130
  - 63653117101
  - 63653117103
  - 63653117105
  - 63653117106
3. Records where INGREDIENTCOST or QUANTITY are equal to zero were excluded from this analysis.
4. Records where PRC\_SRC is not equal to "Y" were excluded from this analysis.
5. Average Reimbursement was calculated by Drug/Strength and Month as:  
$$([\text{Sum of INGREDIENTCOST}] + [\text{Sum of DISPENSINGFEE}]) / [\text{Sum of QUANTITY}]$$

## GE Data

1. Source: Claims Data produced by GE.
2. The raw data were filtered to the following subset of NDCs:
  - 00025152531
  - 00025152534
  - 00025152551
  - 00071015523
  - 00071015534
  - 00071015540
  - 00071015623
  - 00071015640
  - 00071080524
  - 00071080540
  - 00173013555
  - 00186074228
  - 00186074231
  - 00186074282
  - 00300304611
  - 00300304613
  - 00300304619
  - 00300731130
  - 63653117101
  - 63653117103
  - 63653117105
  - 63653117106
3. Only the Retail channel claims were used in this analysis.
4. Records where QUANTITY,AWP, or INGREDIENTCOST are equal to zero were excluded from the analysis.
5. Dispensing fee (df) was calculated by Drug/Strength and Month as:  
$$df = [(COPAY + PAIDTPP)] - INGREDIENTCOST - TAX$$
6. Average Reimbursement was calculated by Drug/Strength and Month as:  
$$([Sum\ of\ INGREDIENTCOST] + [Sum\ of\ df]) / [Sum\ of\ QUANTITY]$$

**CERTIFICATE OF SERVICE**

I hereby certify that a true copy of the above document was served upon the attorney of record for each other party through the Court's electronic filing service on November 28, 2007.

/s/ Steve W. Berman  
Steve W. Berman